Issue 218
PS
1971 Series
January
THE PREVENTIVE MAINTENANCE MONTH
HEY SAM — WHAT D'YA KNOW! WE JUST GOT OUR FADAC WHICH YOU SO "C-A-R-E-F-U-L-LY" PACKED BACK IN VIETNAM FOR RETROGRADE!
TO B. BATTERY Nth DIVISION FORT HARDNOX USA
Will Eisner

LOGISTICS OFFENSIVE . . .

CLOSED LOOP

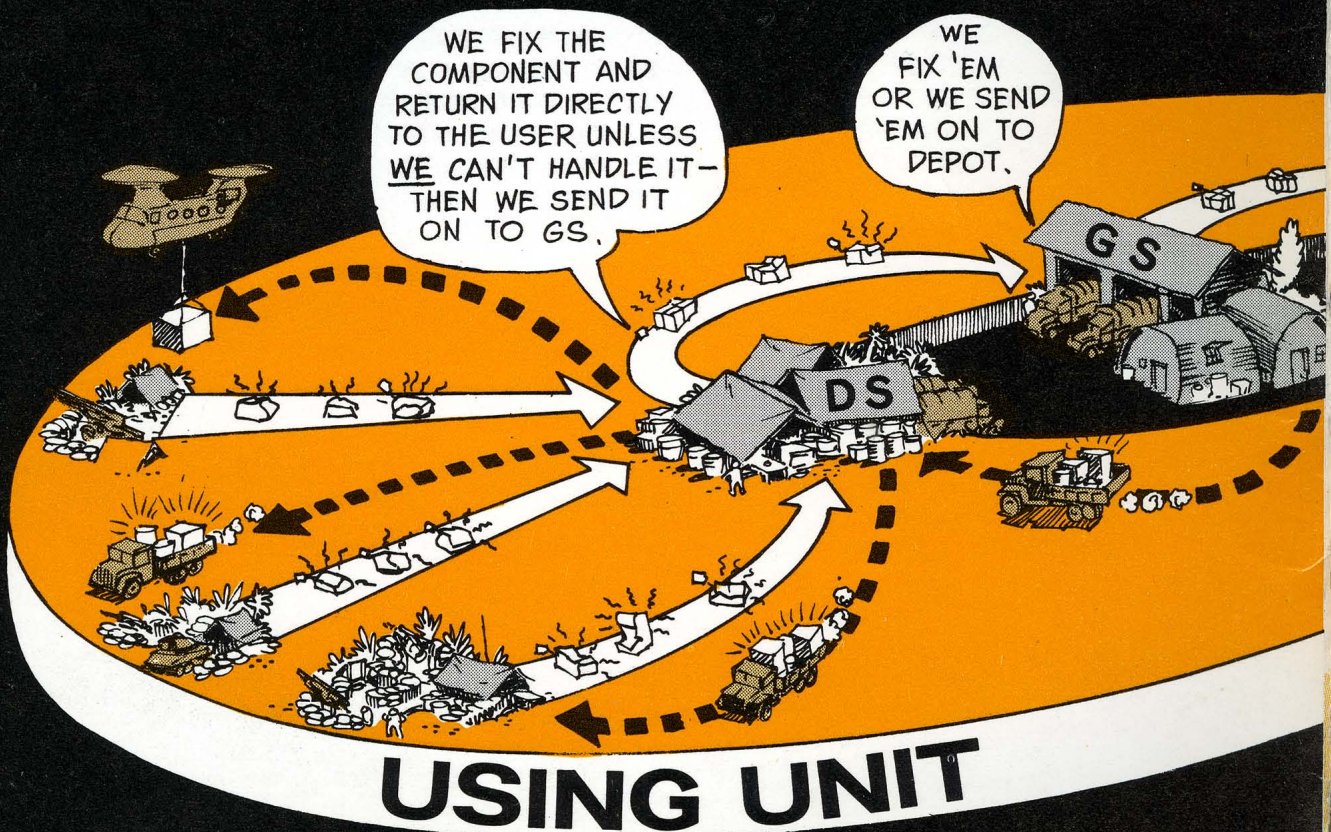
You may know about the "Closed Loop" operation in Southeast Asia – chopper turbine engines and small military standard engines got shipped back to overhaul shops where they were worked over real fast and returned to your area.

This real successful operation gave the logistic planners in the Pentagon some good ideas for the future. Tied in with less maintenance to be done by you at the using organization, they plan for the unit or DS to stock mainly components and assemblies instead of piece parts. The use of direct exchange (DX) will expand to all levels of maintenance.

When replacement of a component is required, the bad one is exchanged at direct support for a good one. DS will repair it or move it back to the outfit that can repair it. When repaired, it's sent back to be used as future exchange stock, completing the "Closed Loop".

To make sure you have the assemblies and components when you need them, a continuous-operating flow of "bad-to-the-rear-for-repair," and "good-to-the-front" will be set up.

The original "Closed Loop" idea is outlined in AR 700-69.



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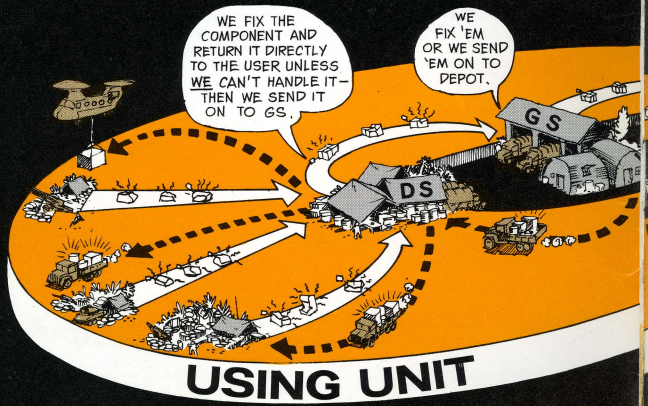

The expanded DX will be coming out in its own reg soon, to make it fit the bigger closed-loop flow of DX items.

In addition, when DS can't give you the good item to repair your equipment, it may swap you an entire piece of equipment from "float stock" and take your out-of-action equipment and repair it for float use.

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THE **PREVENTIVE MAINTENANCE** MONTHLY

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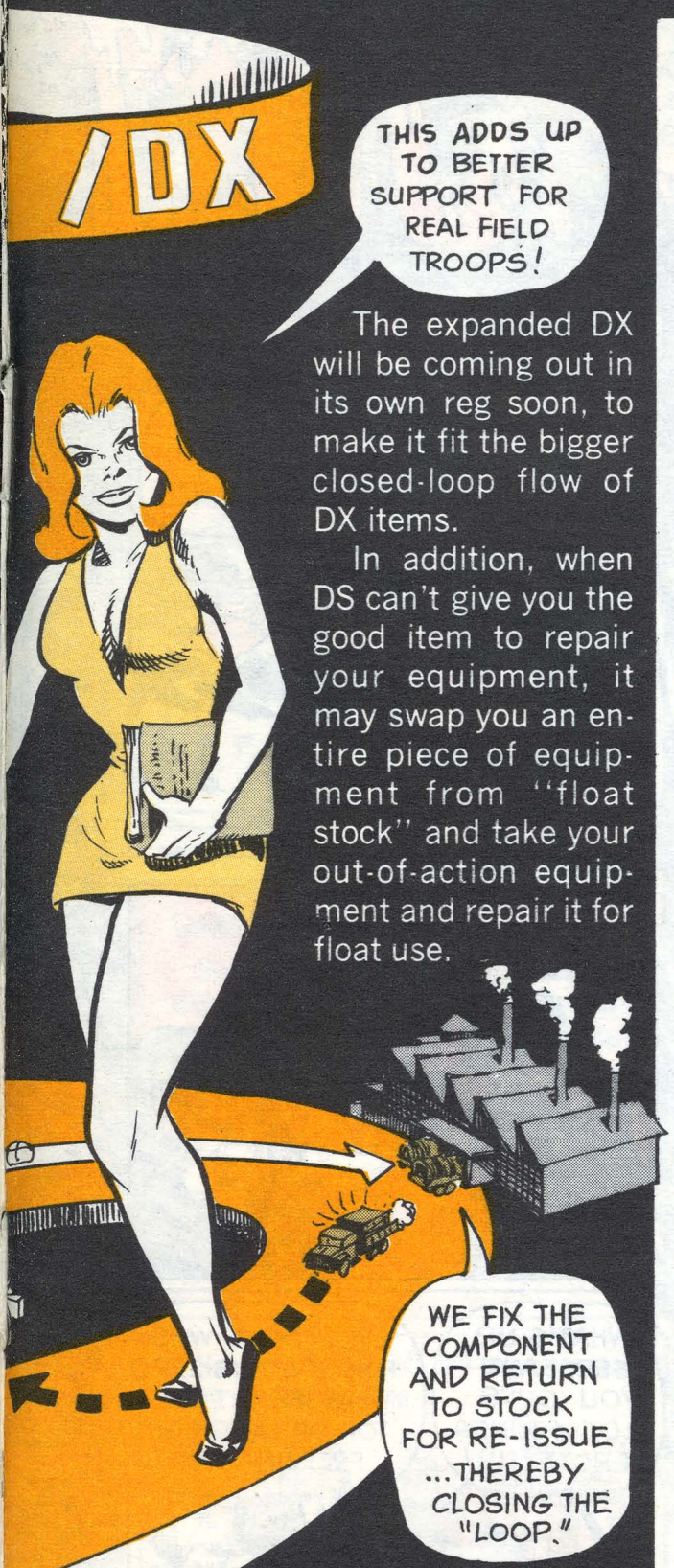

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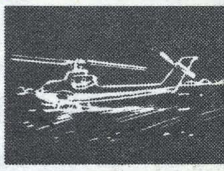

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JUST
NEXT MORNING...
THINK I'LL DROP IN AT "B" COMPANY'S BIVOUAC AND SEE HOW THEY'RE DOIN'...
AND... AT "B" COMPANY...
WOT HAPPENED?
WE'RE FROZE! SOLID!
WHAT'S UP, SERGEANT— YOU GUYS LOOK KINDA FROZE-UP!
EVERYTHING WAS FINE 'TIL THIS ZERO WEATHER HIT ON TOP OF LAST NIGHT'S FREEZIN' RAIN!

JUST FREEZING COLD

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AH YES...AN OLD STORY! LET'S TAKE A LOOK AT THE FREEZE-PRONE AREAS

THE RULE IS... ALWAYS COVER EVERYTHING THAT'LL TRAP WATER—THEN FREEZE SOLID.

ALSO...

PERISCOPES

CONTROL BOXES

MIRRORS

WINDSHIELDS (NEVER SCRAPE 'EM WITH A PIECE OF METAL)

LIKE...

TANKS—

Water can collect as much as 3" deep in M48 & M60 hulls and freeze control cables, rods, clevises and ball joints—Cover deck grills.

DOZERS—

Hose out all mud and sludge between drive sprockets, tracks and rollers before you park overnight.

Non-water proof dials and gages can seep water and freeze tight.

TARPS OR PLASTIC COVERS ARE IN ORDER HERE...

LEAVE BELL HOUSING DRAIN OPEN ON D7 AND D8 TRACTORS.

PS MORE

FREEZING COLD

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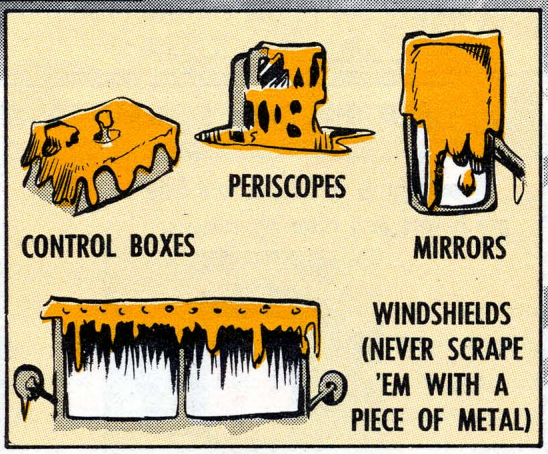

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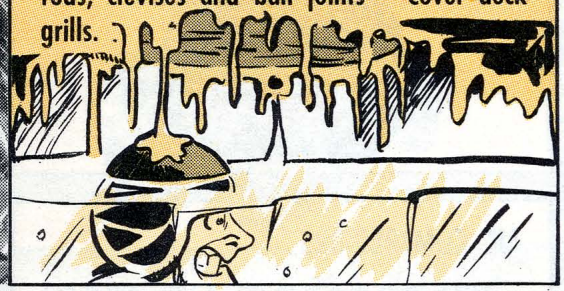

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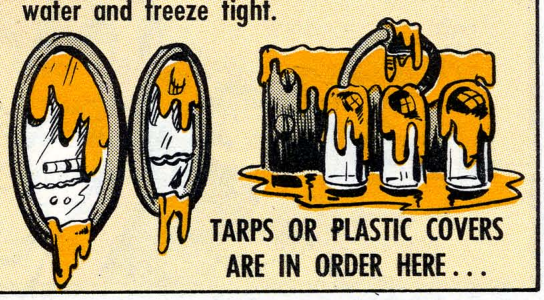

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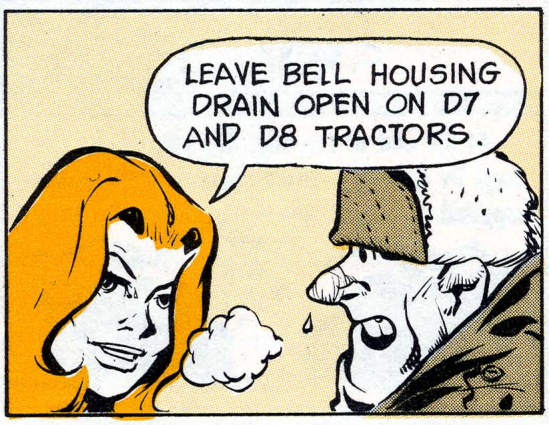

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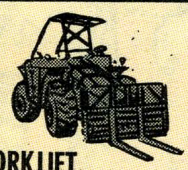

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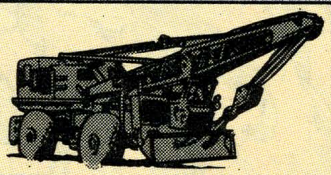
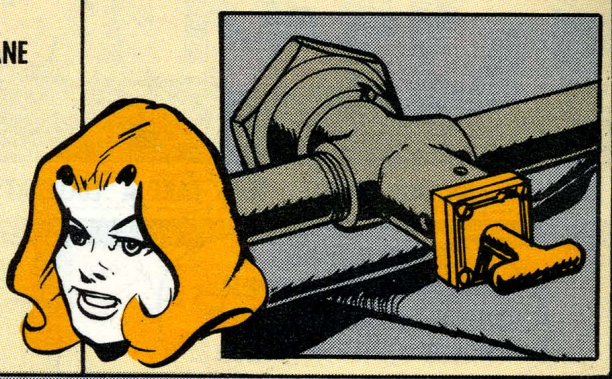


RT CRANE

CHECK FOR MUD THAT CAN FREEZE UP YOUR HEAVY EQUIPMENT'S OPERATING CONTROLS. CHECK FOR SLUSH BETWEEN BELLY PLATE AND STEERING AREA ON YOUR CRANE.

On M149 water tank trailers . . . inner valves must be closed and outer faucets drained to avoid freeze-up.

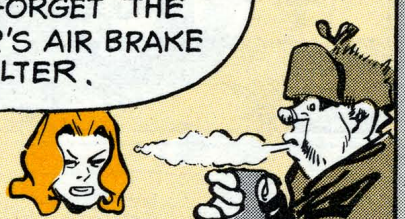


AND THEN THERE'S SNEAKY CONDENSATION — HERE'S WHAT IT DOES:

It collects in fuel lines and filters — drain 'em before and after operations.

It collects in partly empty fuel tanks . . . Keep fuel system winterized with alcohol.

AIR BRAKES GATHER WATER IN RESERVOIRS — DRAIN BEFORE AND AFTER DAILY OPERATIONS - AND DON'T FORGET THE TRAILER'S AIR BRAKE FILTER.



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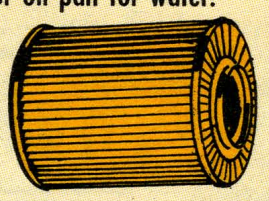
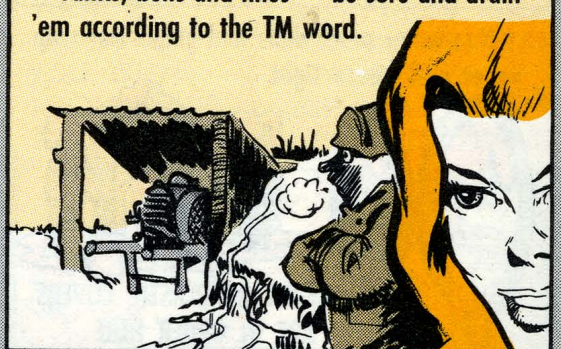


AIR COMPRESSORS . . .

Tanks, bells and lines — be sure and drain 'em according to the TM word.



At the end of the day, dry your brake linings by driving a short distance with brakes applied.

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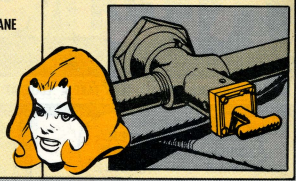

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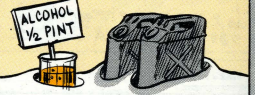

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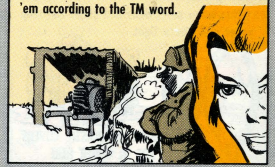

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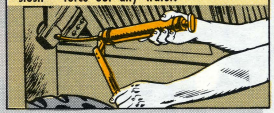

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DECON GEAR . . .

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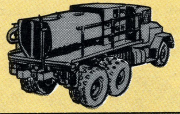

USE YOUR EYES

Get to know the water-catchers that'll freeze up on your piece of equipment. Almost every truck, tank, dozer, grader, crane, gun, you name it, that works out in freezing weather has a few. Search them out and add 'em to your before-, during-, and after-operation PM list. Stop that ice damage.

UPSHAPER FOR 18-YD SCRAPER . . .

DRAIN SAVES PAIN

Dear Editor,

Water got into the tail booms of our 18-yd 585H-G scraper, froze, and cracked the seams.

It won't happen twice — we burned ¾-in diameter drain openings about 2 inches from the side and tail assembly joint on the upper booms, and about the same distance from the bucket back on the lower booms.

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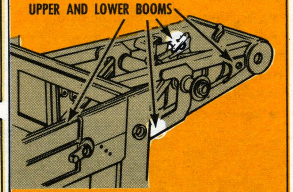
CUT ¾" DRAIN HOLES ON BOTTOM SIDE OF BOTH UPPER AND LOWER BOOMS



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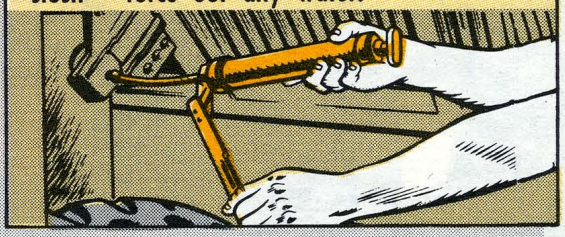

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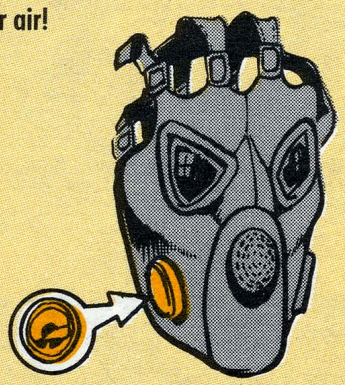

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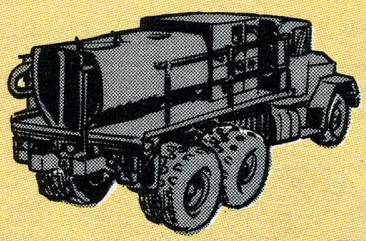

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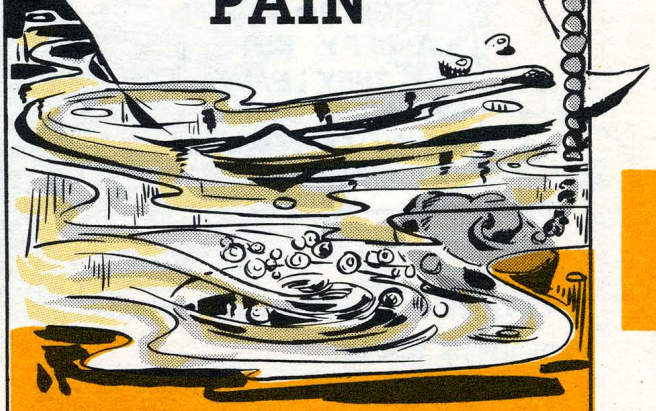

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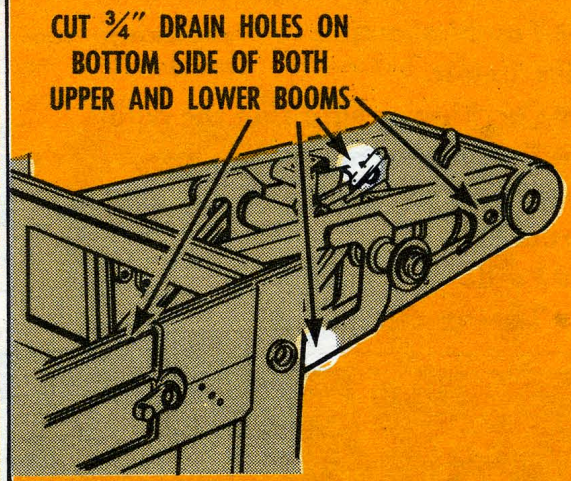

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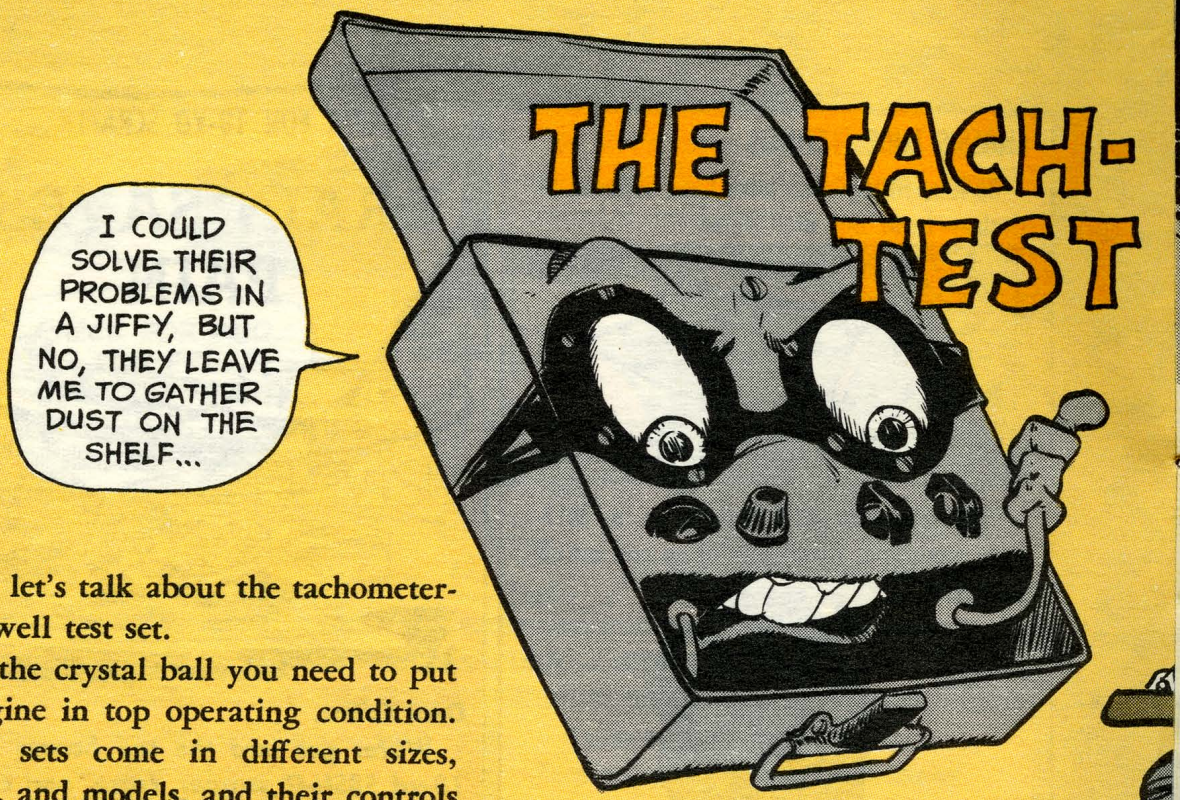
THE TACH-TEST



OK, let's talk about the tachometer-cam dwell test set.

It's the crystal ball you need to put an engine in top operating condition.

The sets come in different sizes, shapes, and models, and their controls may differ a bit. But—you work 'em all pretty much the same way.

A good tach-cam dwell set will save you time, work, and frustration galore. But to get fast, reliable results you have to really know your particular set and exactly what you can expect from it.

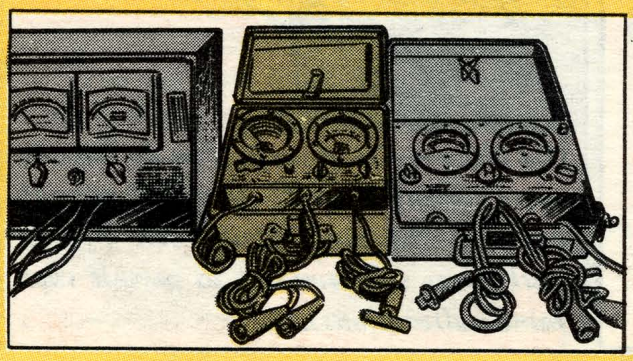
The set's handy when you're—

- Troubleshooting or replacing the distributor.
- Checking or adjusting the points.
- Troubleshooting the engine (it's backfiring, missing, has starting troubles.)
- Pulling a tune-up job.
- Timing the engine.

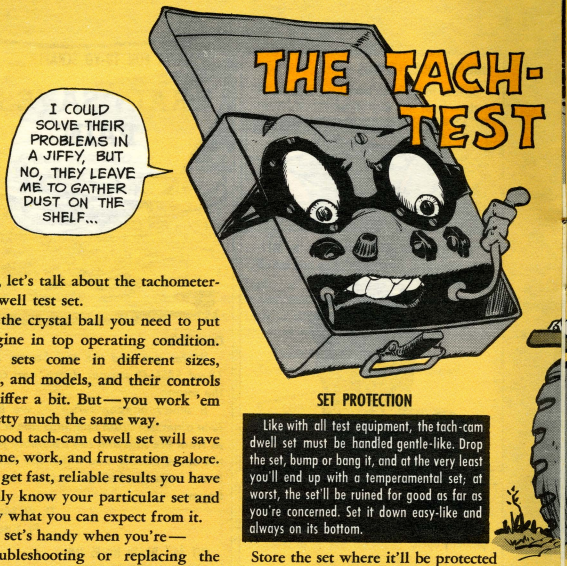
SET PROTECTION

Like with all test equipment, the tach-cam dwell set must be handled gentle-like. Drop the set, bump or bang it, and at the very least you'll end up with a temperamental set; at worst, the set'll be ruined for good as far as you're concerned. Set it down easy-like and always on its bottom.

Store the set where it'll be protected from dust and dampness, and where it'll not be bumped by other tools and careless people.



THE TACH-DWELL TEST SET



OK, let's talk about the tachometer-cam dwell test set.

It's the crystal ball you need to put an engine in top operating condition.

The sets come in different sizes, shapes, and models, and their controls may differ a bit. But—you work 'em all pretty much the same way.

A good tach-cam dwell set will save you time, work, and frustration galore. But to get fast, reliable results you have to really know your particular set and exactly what you can expect from it.

The set's handy when you're—

- Troubleshooting or replacing the distributor.
- Checking or adjusting the points.
- Troubleshooting the engine (it's backfiring, missing, has starting troubles.)
- Pulling a tune-up job.
- Timing the engine.

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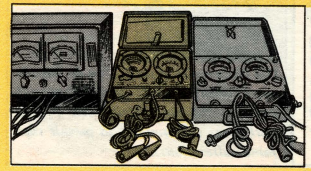
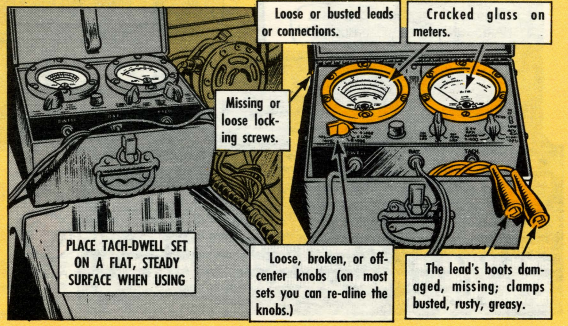


BEFORE USING

Study the set's manual carefully before you use the set. You may have only a manufacturer's pamphlet with some sets, but you get TM 9-4910-416-12 (Sep 63) for the TD-100-series tach-cam dwell test sets.

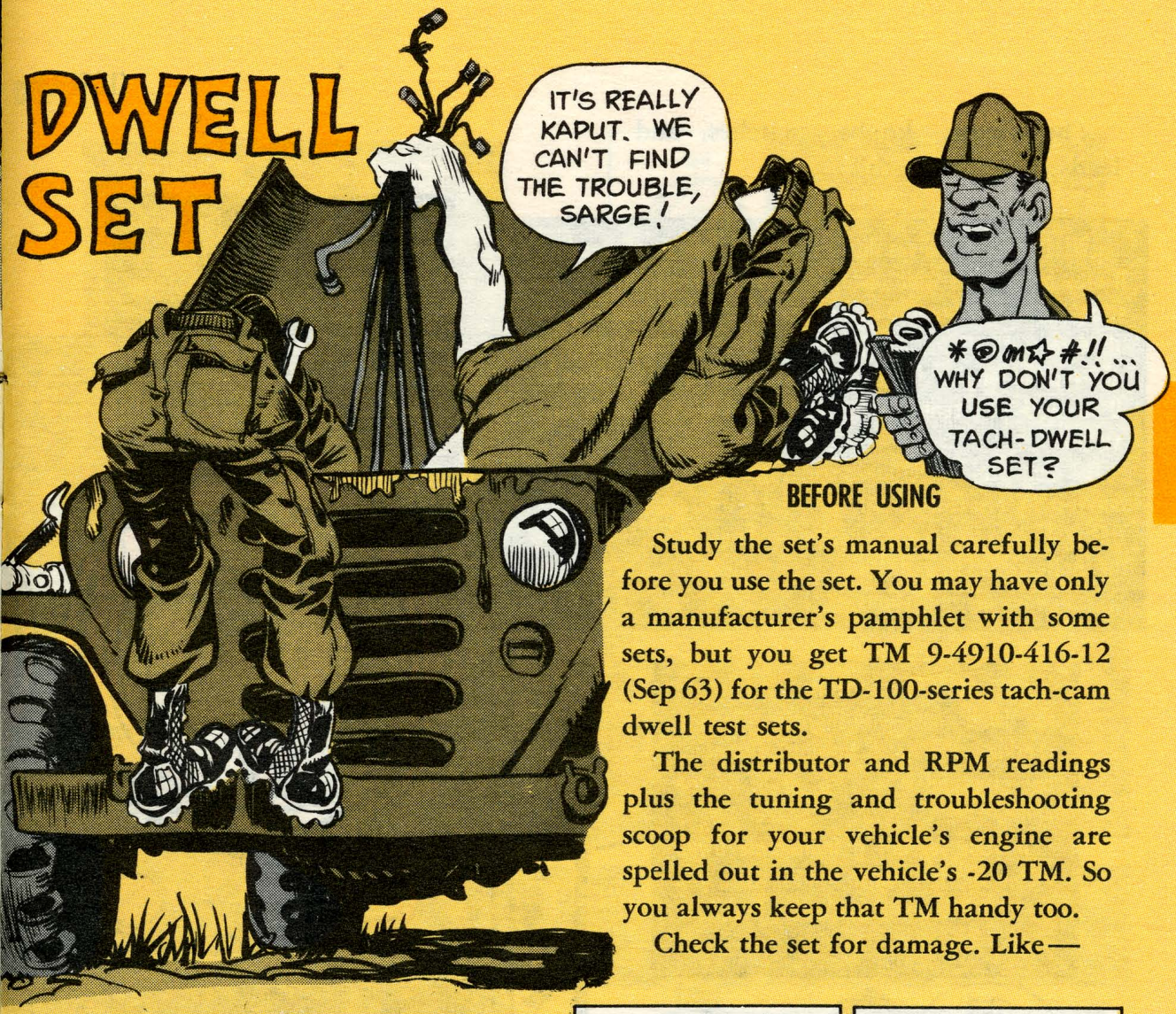
The distributor and RPM readings plus the tuning and troubleshooting scoop for your vehicle's engine are spelled out in the vehicle's -20 TM. So you always keep that TM handy too.

Check the set for damage. Like—



PS MORE

DWELL SET



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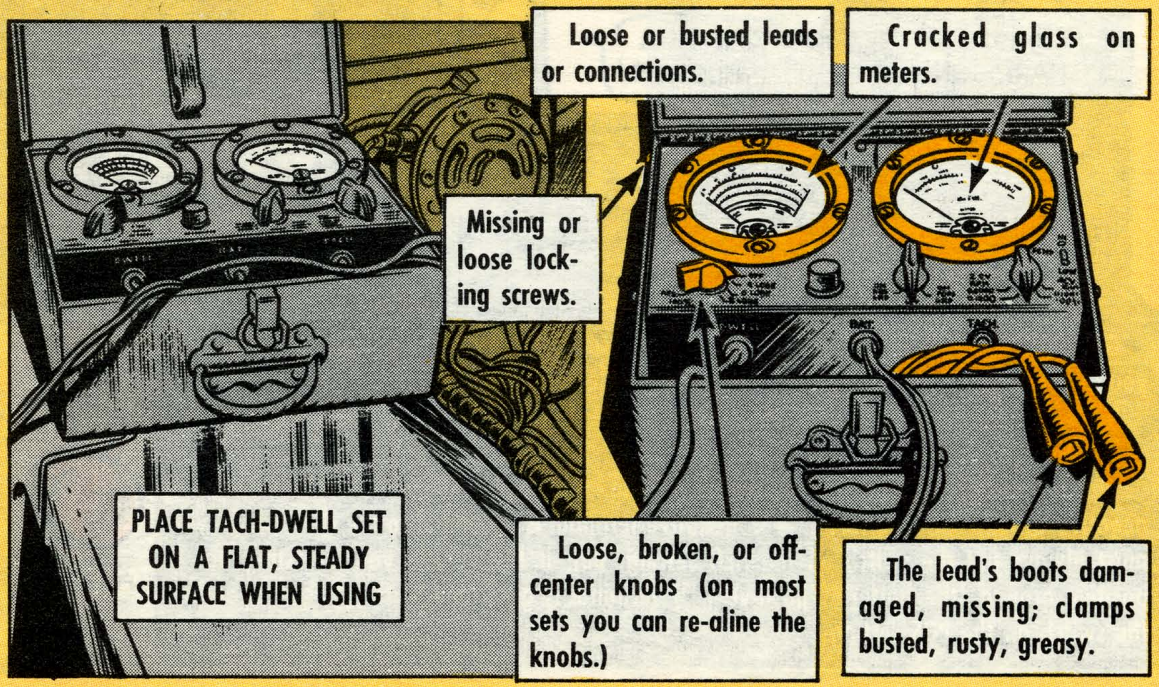

P.S MORE

The meters, knobs, switches, and leads line-up like this:

DWELL METER — Gives the distributor cam dwell reading. It may be a single-scale meter (0 to 50 degrees), or, a multi-scale meter, you have to calibrate the multi-scale meter (with its dwell set button), to a specified **set-line** (starting point) for the type of engine (4, 6 or 8 cylinders) you're working on. 0 to 100 per cent dwell scale is not used on 4, 6 or 8 cylinders.

The multi-scale meter has 3 scales for taking dwell readings, and a red-green (GO-NO GO) scale for testing point resistance. This scale also tattles on other power-flow problems between the battery and the distributor (low battery, bum ground, broken wires or connections, etc.).

DWELL SET SWITCH (on multi-scale dwell meters) — For calibrating the meter, and spotting the set-line.

LOBE SELECTOR SWITCH — It lines up the dwell meter with the engine you're checking. You set it to match the number of cylinders — 4, 6, or 8, on the engine.

If your set has a multi-scale dwell meter, flip this switch to RES, when you go to pull a point resistance check. See page 12.

GROUND SELECTOR SWITCH — This matches the set's polarity to the polarity of the vehicle you're checking. (Some sets call it the polarity selector switch).

It has a negative and a positive setting, and it may also serve as the ON-OFF power switch for the set.

Watch yourself carefully on this switch setting — tactical and combat vehicles have a negative ground (the battery's (—) negative terminal is grounded to the chassis). So you must always put the switch on the NEG setting. But, if the vehicle you're testing has a positive ground (the battery's positive (+) terminal is grounded to the chassis), you put the switch on the POS setting.

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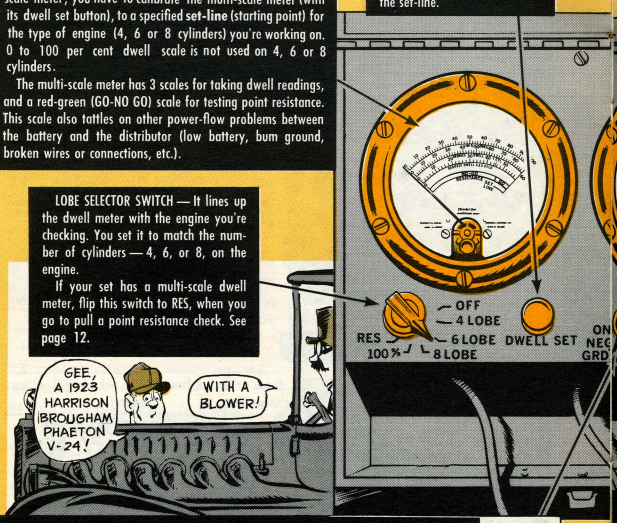

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TACH METER — Gives engine RPM. It covers 2 RPM ranges:
Minimum 0-1000 (or 1200 depending on your set) RPM.
Maximum 0-5000 (or 6000 depending on your set) RPM.

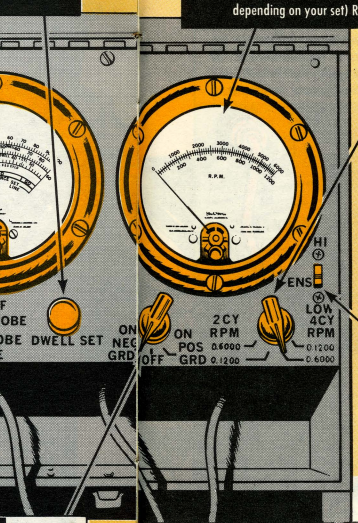
POWER SWITCH — Some sets have a separate ON-OFF power (toggle) switch. On other sets you control the ON-OFF power with the ground (polarity) switch.

SPEED (OR TACH) SELECTOR SWITCH — Set it to match the type of engine (2- or 4-cycle) you're testing, and to the RPM range you'll need.

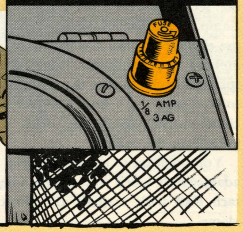
And, here's a big, fat caution on this switch —

Always set the switch on **maximum RPM** when you **start the engine.** After the engine's idling you can set the switch at minimum RPM, if that's the range you'll need. But, never start the engine with the tach switch on minimum RPM. Even if you're real light-footed, you're bound to race the engine a bit as you start it, and the meter's needle will ram the peg on its right as the engine RPM exceeds the meter's range. And, once a needle's pegged it'll not work right.

SENSITIVITY SWITCH — Keep it on **Low.** Only time **you** flip switch to **HIGH** is so's you can operate tachometer when spark plug voltage is low.



FUSE — Some sets are protected with an 1/8-amp fuse. It's located on the face of the set. Make sure the fuse is in place and OK, before you hook up the set.



PS MORE

ON SET

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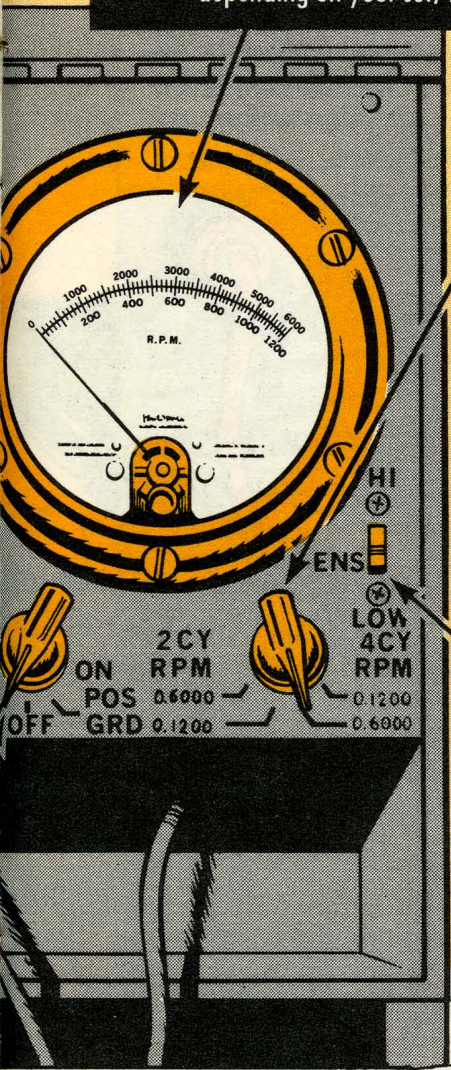

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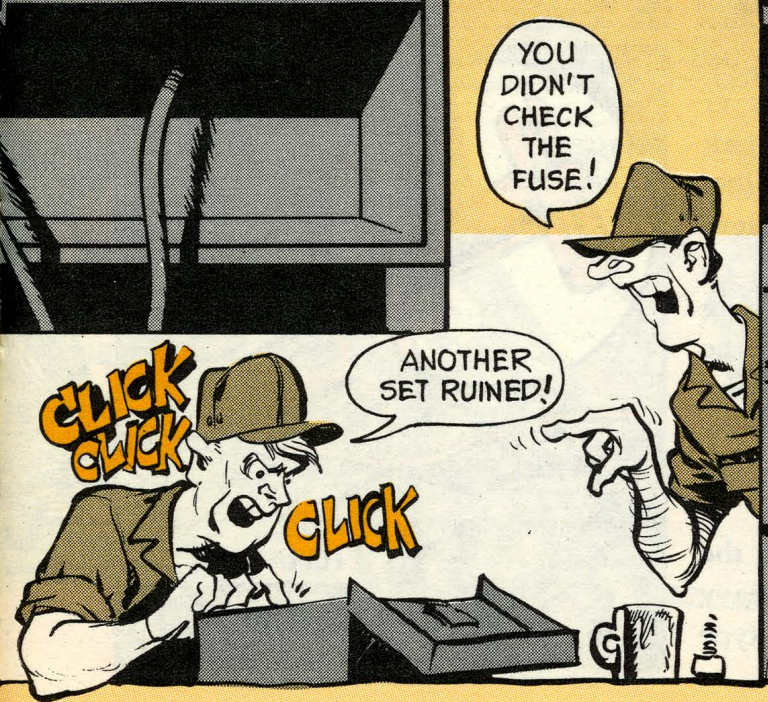

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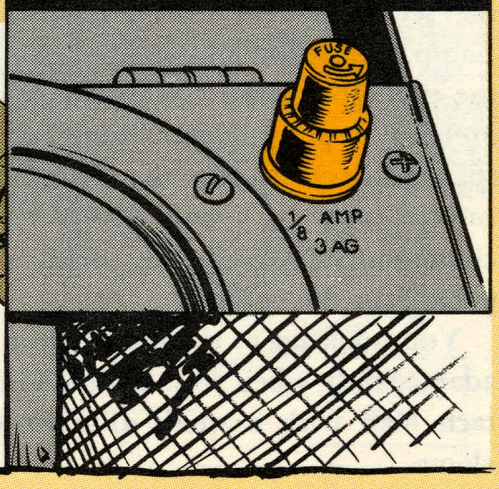
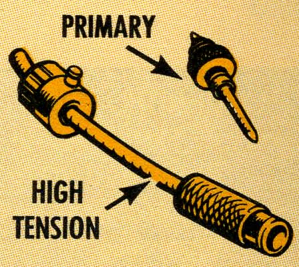


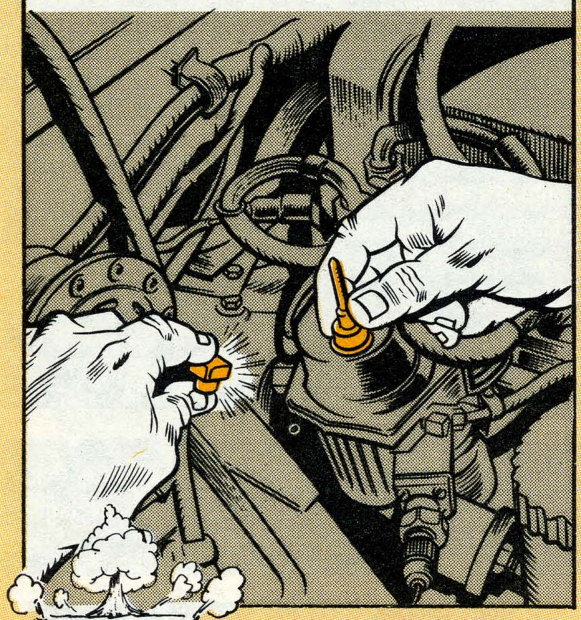
PS MORE

HOOKUPS

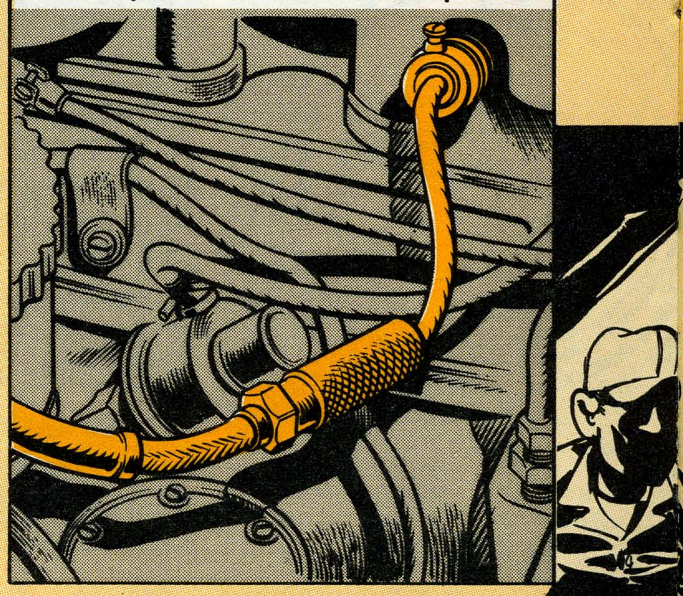
Along with the test set you need the primary-circuit adapter and the high-tension adapter from the Adapter Set FSN 4910-348-7600. They're for testing a vehicle which has a shielded electrical system, natch. To install the adapters:

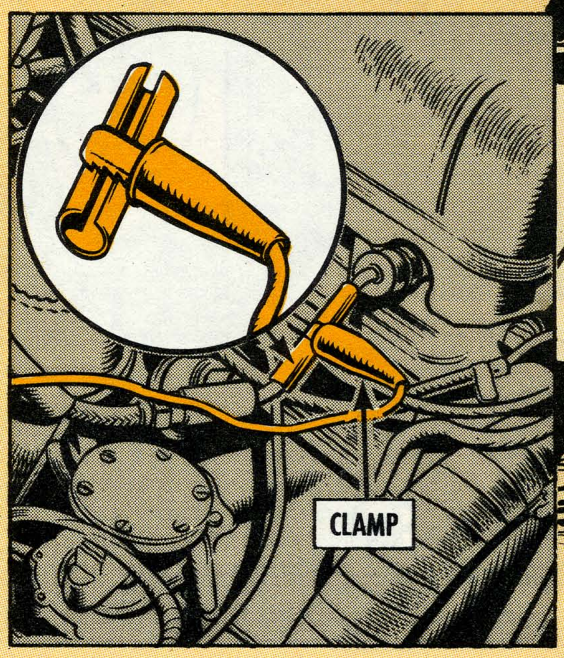


1. Remove the access plug from the distributor cover and screw in the primary-circuit adapter. Then clamp the set's dwell test (white or blue boot) lead to the adapter.



2. Remove the cable from the spark plug, attach the high-tension adapter to the cable, and screw the other end of the adapter on the spark plug. Clamp the set's tach (yellow boot) lead to the adapter.





Hold one—if your test set has a split-sleeve clamp on its tach lead. Never hook it up to the terminal of the spark plug adapter—if you do you'll blow the set. Test sets with a split-sleeve clamp need only a magnetic hookup. To use this type clamp you'll need a long pigtail type plug adapter. Just clamp the split-sleeve clamp over the adapter's insulated wire . . . **And take care** the clamp doesn't touch any other component on the engine.

You hook up to the terminal on the adapter only when your set has a heavy tach lead with a small alligator-type clamp.

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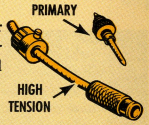

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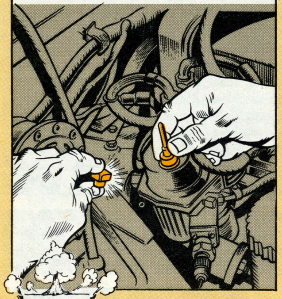

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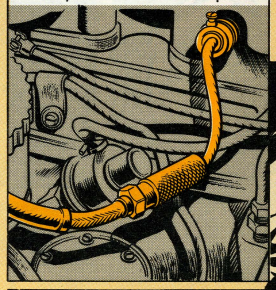

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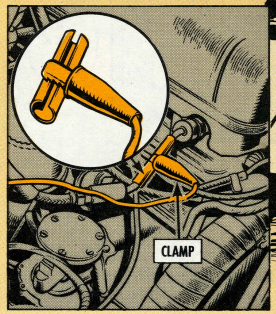
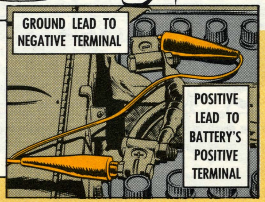


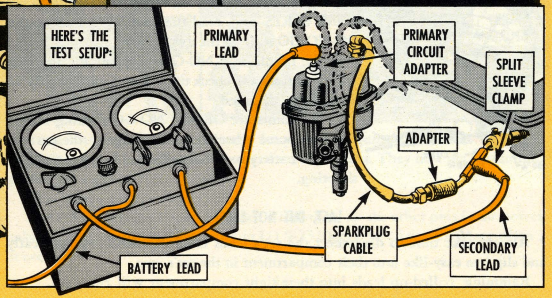
3. Battery hookup — Clamp the set's "Bat" positive (red boot) to the battery's positive terminal. And the set's ground lead (black boot) to the battery's negative terminal.

If the cable color coding is different on your set, just follow the hook-up markings alongside the cables.



TESTING

1. Set all the switches.
2. Zero the meters with the adjusting screw.
3. Calibrate dwell meter (on multi-scale meters), and establish set-line. Turn the dwell set switch left or right as needed to calibrate the meter on the set-line needed for your engine. (See your set's manual for exact set-line for your engine.)



PS MORE

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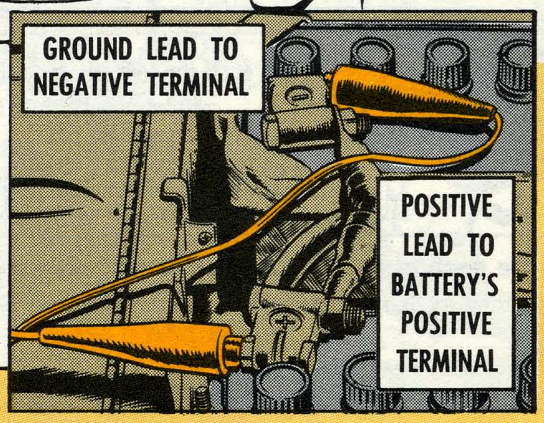

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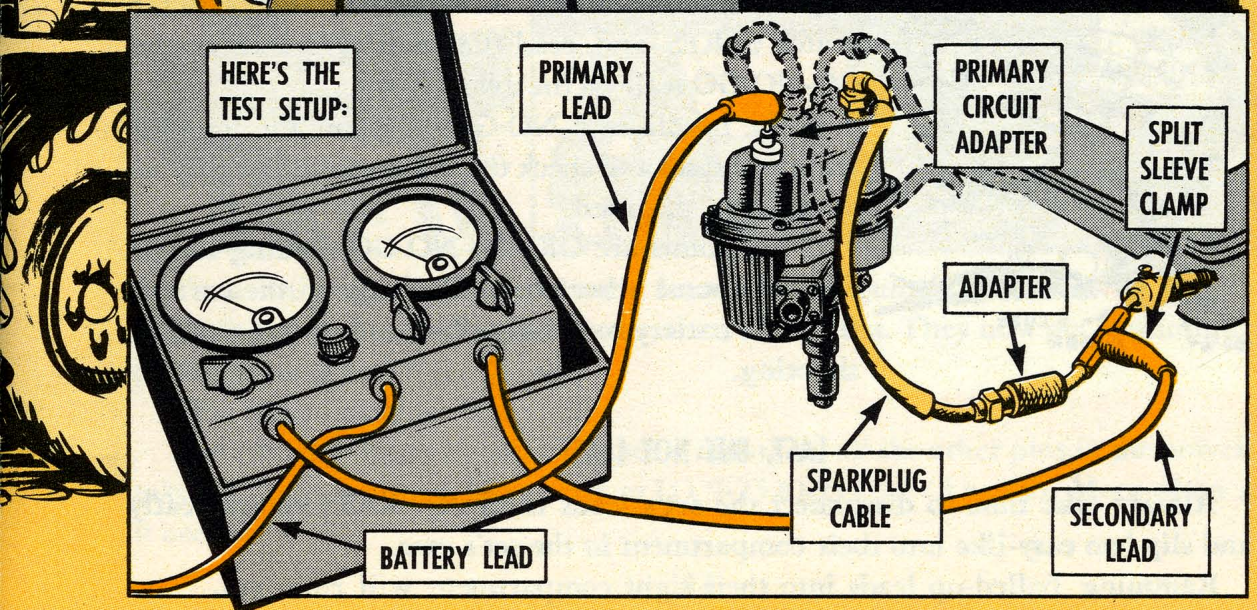


PS MORE

4. Start the engine as easy as you can and take your readings. The meters will give you the score on distributor dwell and RPM.

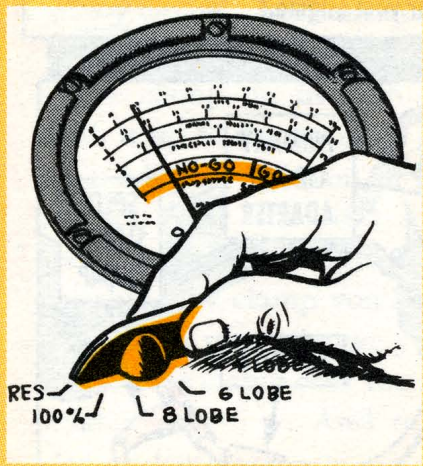
5. If the readings don't jibe with the scoop in your TM, start troubleshooting by the vehicle's manual.

6. If the tachometer pointer fluctuates, could be your battery or generator-regulator voltage is too low to power the set. Flip the sensitivity switch to HIGH. If that doesn't settle the needle, return the switch to LOW, and start troubleshooting.

7. If the dwell meter gives you the right reading, the needle shouldn't vary more'n a few degrees (as specified by the vehicle's TM) when you gun the engine.

8. Take the dwell reading at the RPM range called for in your vehicle's TM.

POINT RESISTANCE CHECK



With the engine stopped, the breaker points closed, and the ignition switch on—flip the lobe selector switch to RES and, read the point resistance on the GO-NO GO scale on the dwell meter.

If the needle says NO-GO, turn off the ignition and the test set and check the points. Could be they're dirty, burned, pitted.

If the points are OK, the NO-GO reading means you have some other power blockage in the current from the battery to the distributor. So, start trouble-shooting.

LAST, BUT NOT LEAST

Always take time to disconnect the set's leads carefully. Roll 'em up neatly and slip 'em easy-like into their compartment in the set's case.

Ramming balled-up leads into their tight compartment will ruin 'em.

GROUND MOBILITY

IN A P-T-O BIND . . .

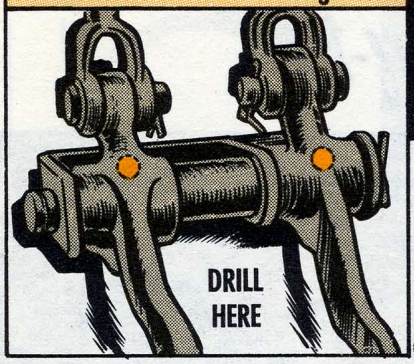
PIVOT INTO ACTION

Grab the bull by the horns when your 5-ton truck's P-T-O controls start to stick. You can't dillydally in a saltwater region.

Put your own lube fittings on the transfer shift and winch-control levers—like it says in TB-750-981-1 (Jan 70), Article 3-8. Then you'll get the grease to the stubborn pivot shaft. Lube with GAA every 6,000 miles or semi annually.

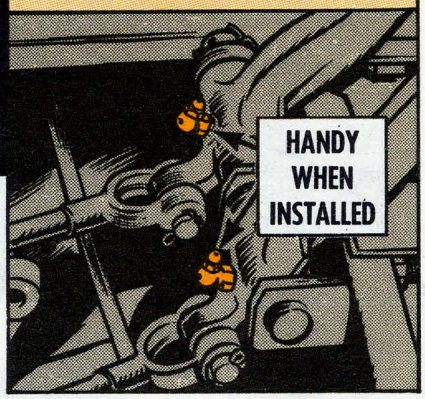
Here's how you do it:

1. Take off the 2-lever assembly and spot for drilling — on the back side of each bushing boss.



2. Use the 11/32-in drill bit, then thread with the 1/8-in pipe tap. (Drill and tap are in the No. 2 Common Tool Kit.)

3. Screw in the 90-degree lube fittings, FSN 4730-050-4207.

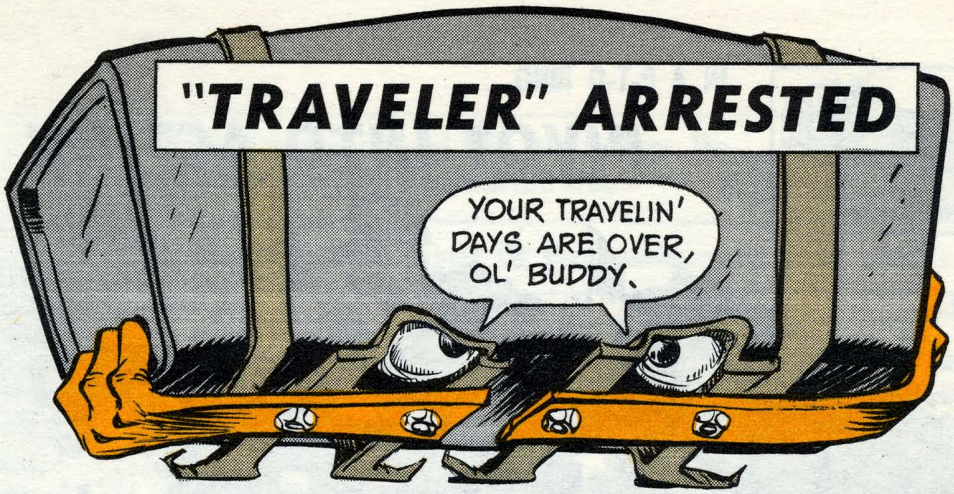


These fittings will show up handy for your lube gun.

With new production model trucks, there's no sweat. They now get a cadmium-plated pivot pin to fight the rust.

That wraps it up, except . . .

Don't forget to use the oil can once a month on all the other pins in the power-take-off linkage system, like it says in LO 9-2320-211-12 (Apr 68). More often if it needs it.

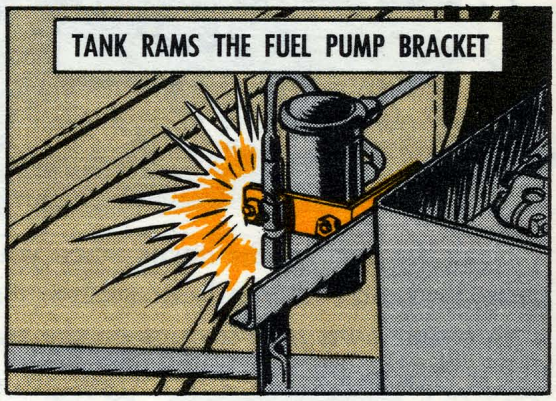


Dear Half-Mast,

No matter how often or how much I tighten the straps, I have trouble with shifting fuel tanks on our 5-ton M51 dump trucks and M52 truck tractors. The real trouble comes when the right tank moves forward and rams into the fuel transfer pump bracket. Enough of this, and the bracket punches a hole in the tank.

What's the answer to this problem?

SP5 Z. B. R.



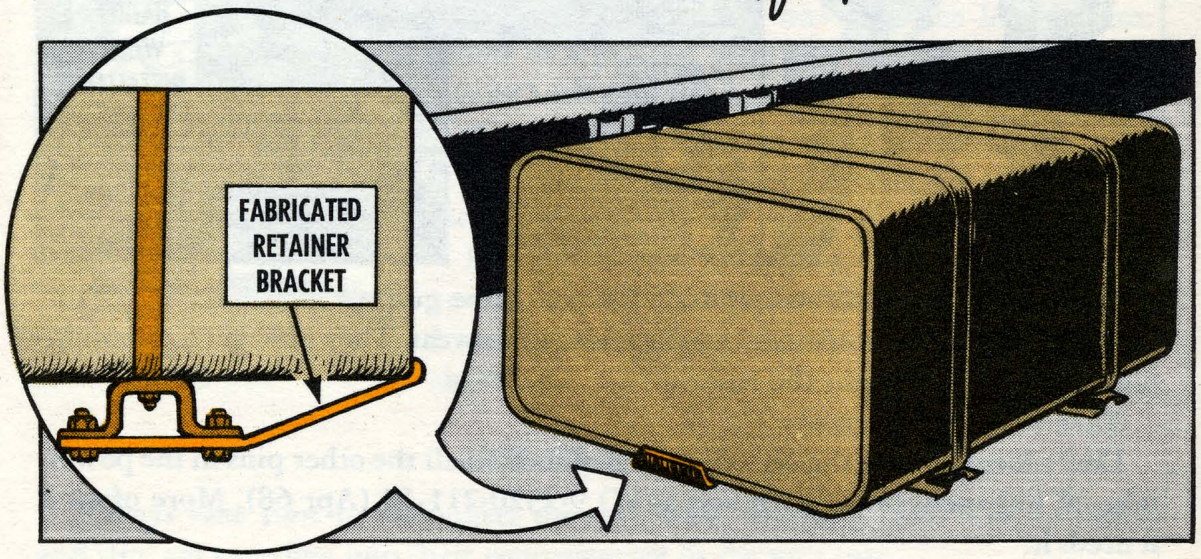
Dear Specialist Z. B. R.,

You can stop those travelin' tanks by applying a fix offered in TB 750-981-2 (Jun 68). Get your CO's OK to fabricate and install retaining brackets—front and rear on **both** tanks, if you need 'em.

The bracket's bolted to the fuel tank hanger at one end and hooks just over the fuel tank lip at the other end.

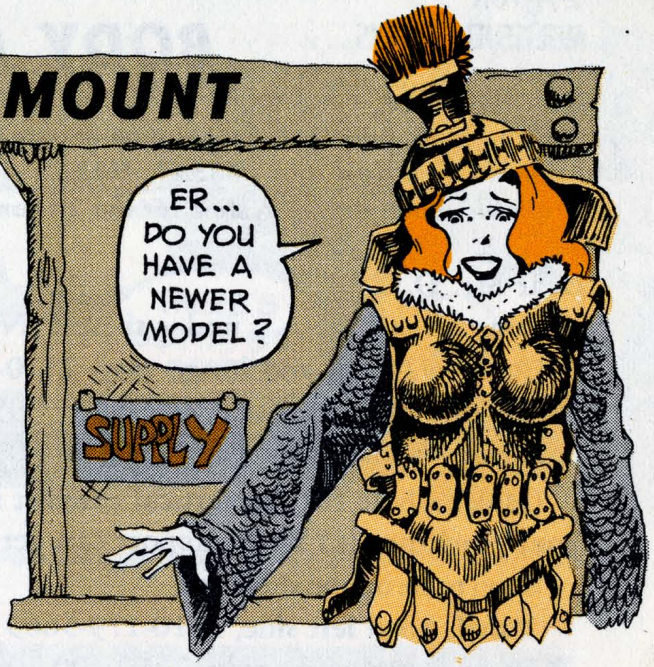
Stopped—one fuel tank.

Half-Mast



5-TON CARGO TRUCK . . .

ARMOR BUSTS MOUNT



Dear Half-Mast,

Armor plating that we slide into the doors of our 5-ton cargo trucks causes the cab to rock from side to side. This causes the cab rear mounting bracket to crack and then give out completely.

I've seen what seems to be an improved, stronger mount on later production trucks. That looks like the solution to our problem.

Can we get the new mount for our older trucks?

CW2 S. G.

Dear Mr. S. G.,

There is a stronger cab rear mounting bracket on late production G744-series 5-ton cargo trucks — M54A1C. And it should take the extra weight of that armor plate.

But good ol' "prevention" offers a quicker, cheaper solution to your problem. Like getting those mounts reinforced before they give out — especially even before you put the armor plating in your trucks.

A good welder, using TM 9-237 (Nov 67), should be able to do the job for you.

If this doesn't do the trick, you can get the improved mount with PN 11593191 , using the exception data requisitioning procedure per AR 725-50, Ch 34 (Oct 69) para 3-20.1.

Half-Mast

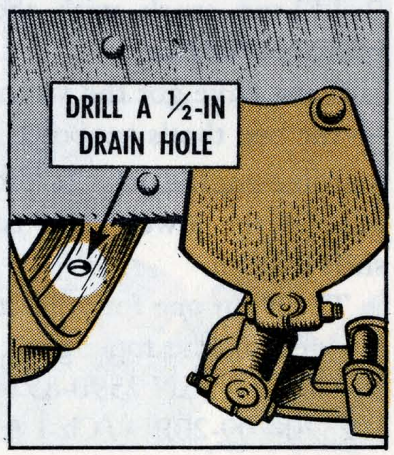
5-TON GOOK SPOOK

You been haunted by the goop collecting in the No. 2 crossmember of your 5-ton truck?

Could be you've got a vehicle minus the 1/2-in drain hole that should be at the bottom center of the crossmember. Some trucks, like M52A2's and M54A2's, were passed up during the manufacturer's assembly.

A simple fix will get rid of this ghost.

You just clean out the crossmember gutter, drill the needed 1/2-in drain hole and say goodbye — forever — to the oil, water and dirt hex.



2½-TON
MULTIFUEL TRUCKS...

BODY PARTS

Dear Half-Mast,

Some body parts for the gasoline-engine G742-series 2½-ton trucks (M35, etc.) won't fit on the multifuel jobs (M35A1, M35A2 etc.). Are the hood, side panels and fenders available in the supply system for the 2½-ton multifuel-engine vehicles?

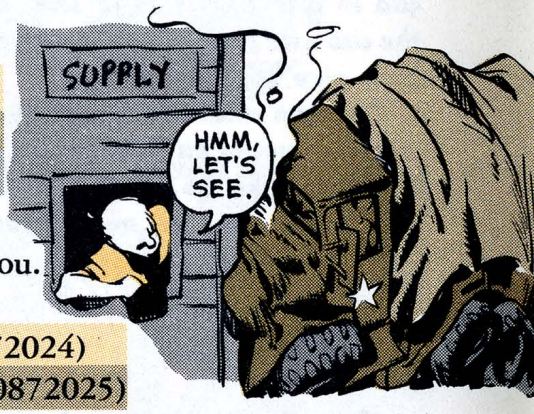
CW2 D. C.

Dear Mr. D.C.,

Some of 'em are . . . under these FSN's:

Hood, w/catch and hinge assy, 2510-983-6917
Fender, front left side, 2510-065-0952
Fender, front right side, 2510-065-0953

(Make a hole for the vertical exhaust stack if your truck has it.) Your support can get 'em for you.



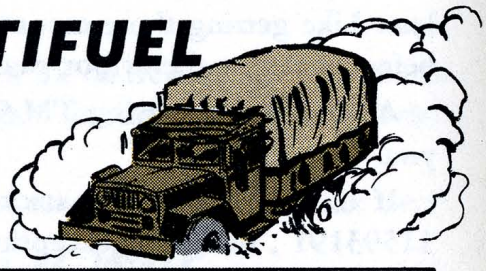
Soon to be on the shelf are:

Panel, hood left side, 2510-179-5669 (PN 10872024)
Panel, hood right side, 2510-400-7083 (PN 10872025)

If ordering by FSN doesn't bring these 2 items and you're in a hurry, use the part numbers and try exception data-type requisitioning—per para 3-20.1, Ch 34 (Oct 69), AR 725-50.

Half-Mast

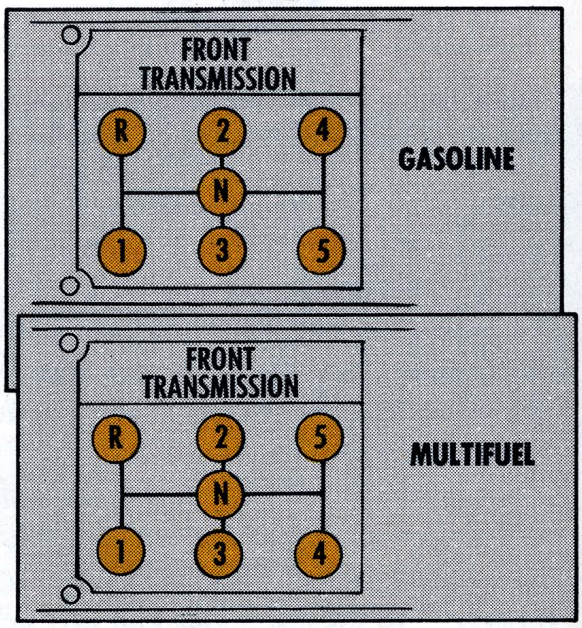
SHIFT TO MULTIFUEL



Better check that shift pattern on your M35A2 truck's instrument panel data plate. Same goes for any other 2 1/2-ton truck with the LD 465-1 multifuel engine.

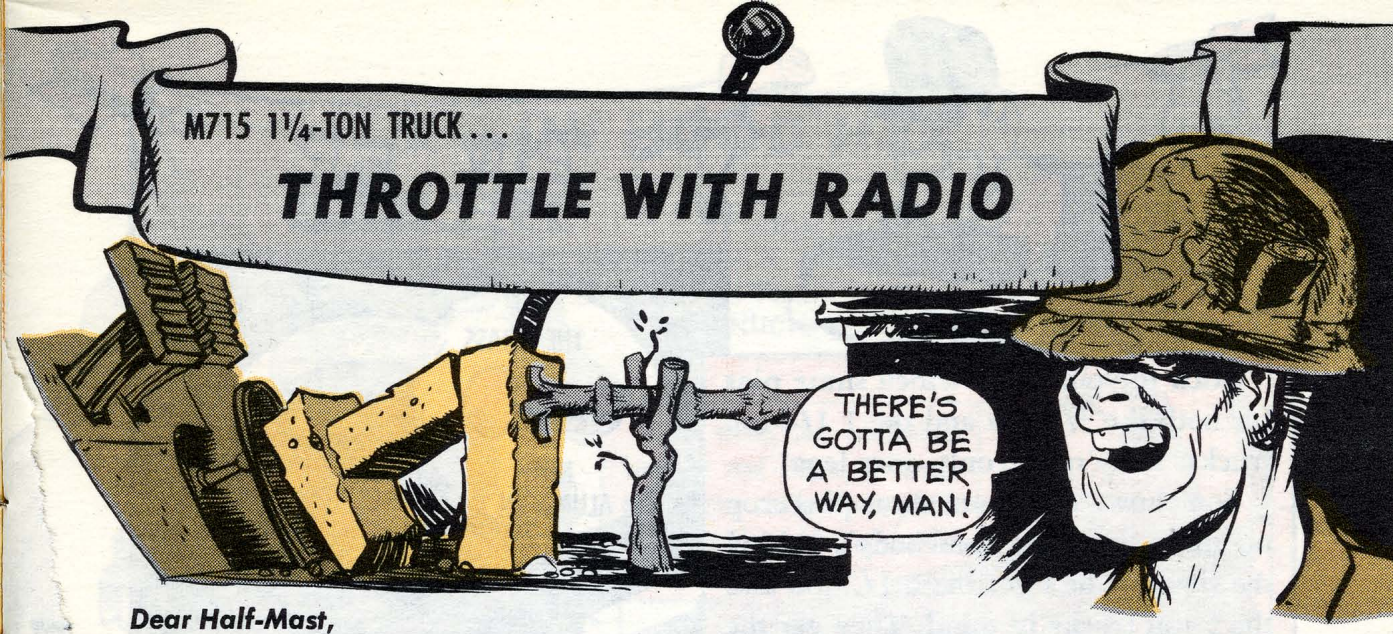
Some have got the wrong data plate—the one that's supposed to be on the gasoline-engine job. It shows the 5th gear in the lower right corner of the shift pattern.

The right one for your multifuel has 5th gear in the top right corner. Need it? Get it—FSN 2590-852-1081 in TM 9-2320-209-20P w/Ch 1 & 2 (Apr 69).



M715 1¼-TON TRUCK . . .

THROTTLE WITH RADIO



Dear Half-Mast,

There must be a better way than a brick-on-the-gas-pedal to run our radio equipped M715 5-quarter trucks at high idle.

Isn't there a throttle available?

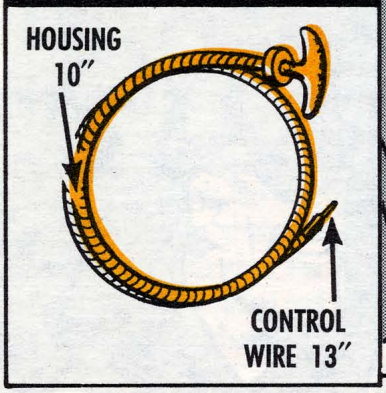
SGT G. E. W.

Dear Sergeant G. E. W.,

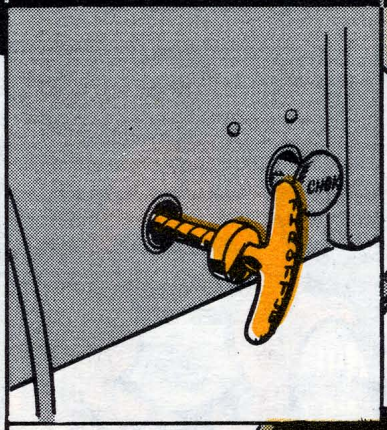
Yes, there is a throttle setup. It was in TB 750-981-3 (Jul 68), Article 166.

You get Throttle Assy, FSN 2590-693-0612, and 2 Connector Assy, FSN 2910-753-9184.

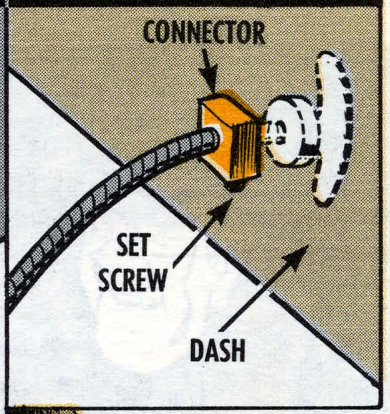
Cut the throttle assembly housing to 10 inches long and the control wire to 13 inches long.



Install the throttle assembly in the existing hole on the dash next to the choke control knob.



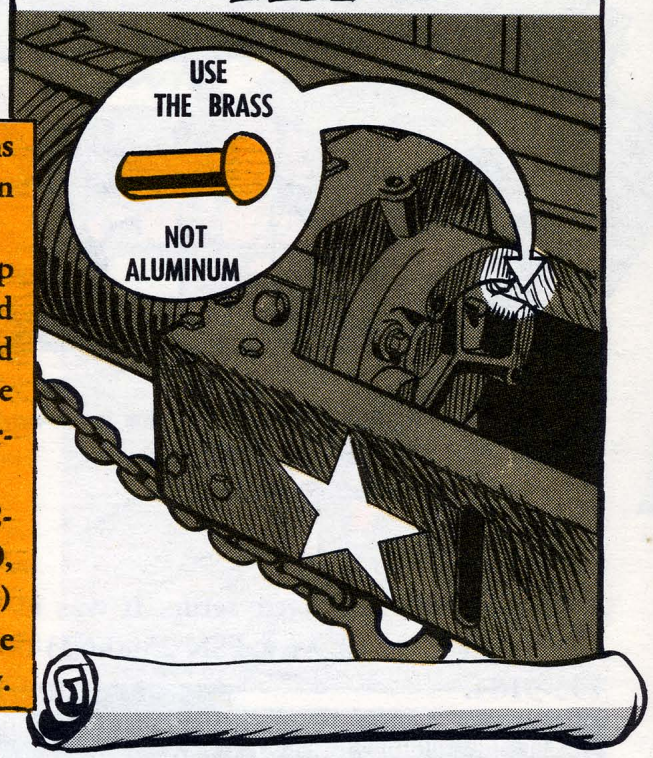
Position one connector on the control wire so it acts as the throttle stop.



Remove the cotter key from the accelerator bellcrank pin and insert the control wire. Position the other connector on the end of the control wire so it'll move the accelerator when the throttle is pulled.

Half-Mast

PiN 'ER BRASS

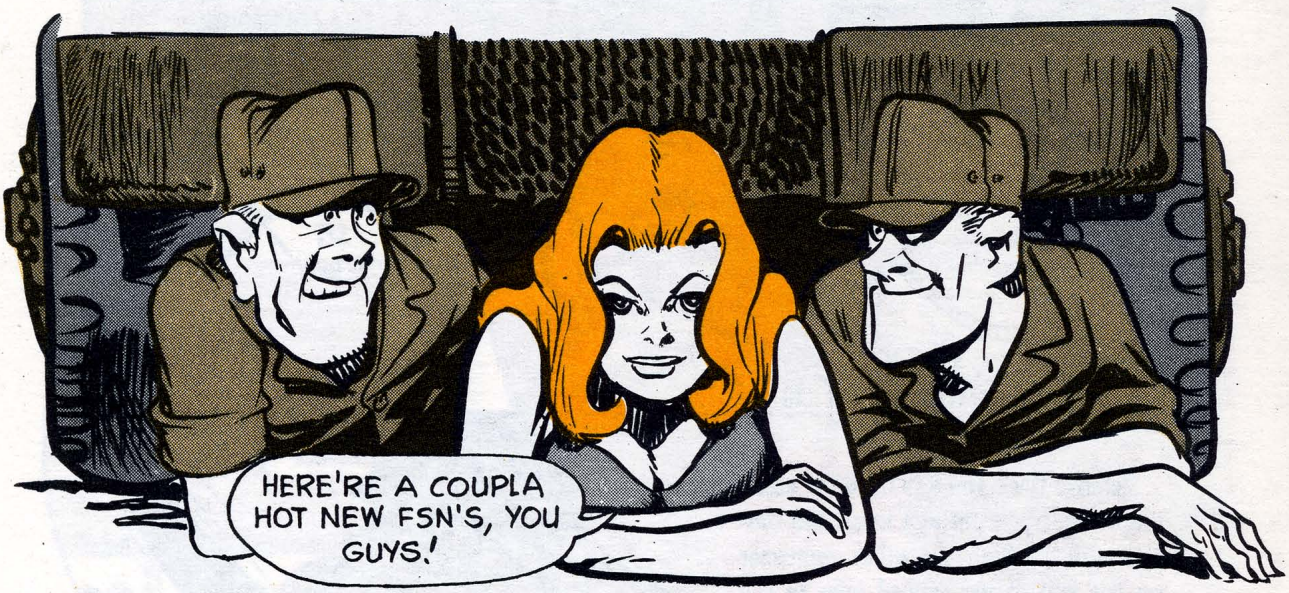


Stick to your brass winch shear pins for both the 3/4-ton and the 1 1/4-ton trucks. They're the only ones legal.

Somehow, aluminum shear pins crop up there, meaning somebody's behind the times or he's got the 2 1/2-ton and the 5-ton trucks in mind. They get the aluminum, but that's a horse of a different metal.

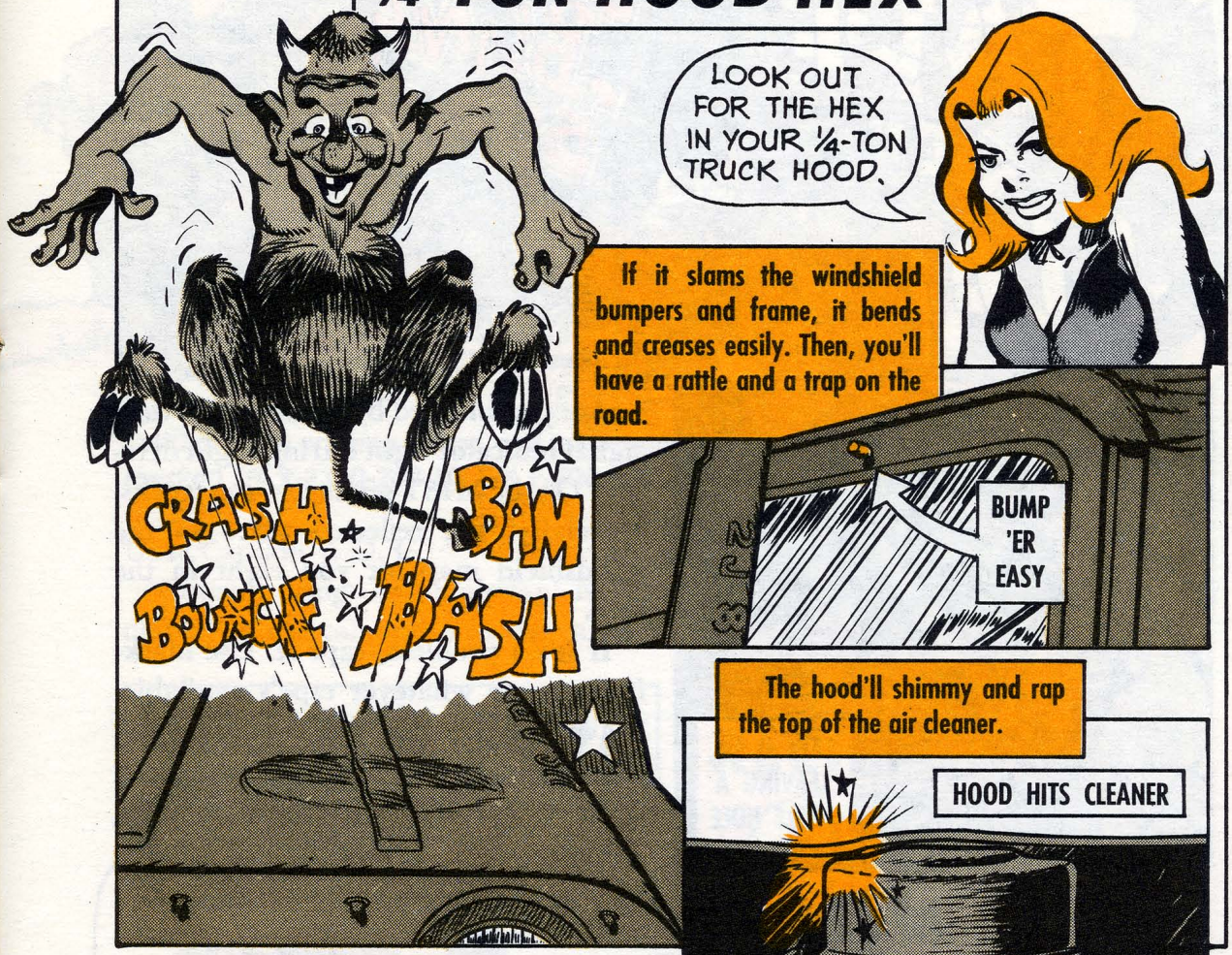
For 3/4-tonners, TM 9-2320-212-20P (Feb 60) lists FSN 5315-737-3760, while TM 9-2320-244-20P (Oct 68) shows FSN 5315-935-9084 for the 1 1/4-tonners.These are brass—strictly.

FORK INSERTS



You now can get the shifter fork nylon inserts for your M37B1 3/4-ton truck's Model 420 transmission with FSN 2520-918-0604. By the way, the fork itself has a new FSN. It's 2520-594-0093.

¼-TON HOOD HEX



If it slams the windshield bumpers and frame, it bends and creases easily. Then, you'll have a rattle and a trap on the road.

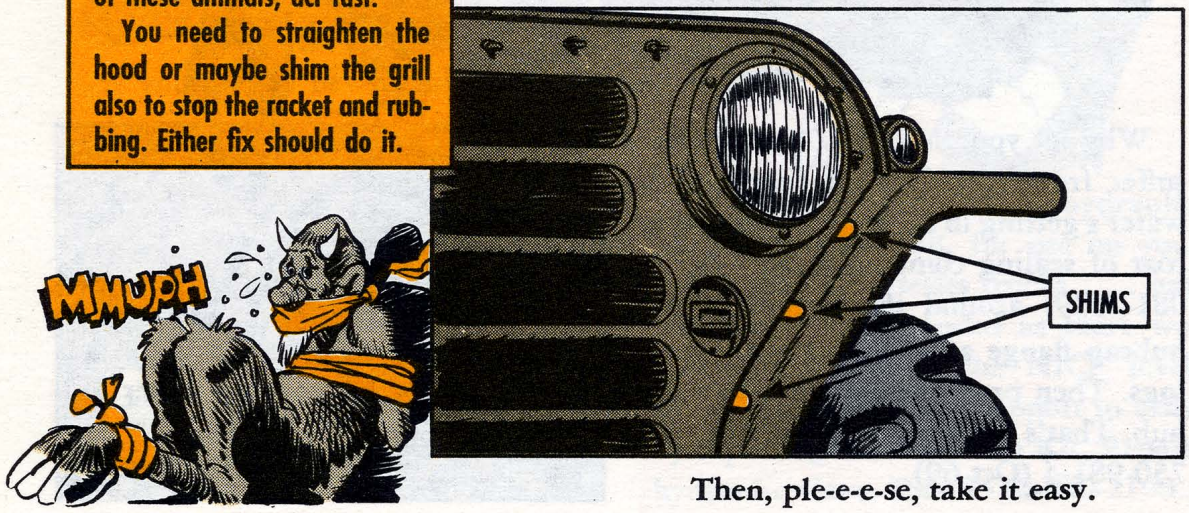
The hood'll shimmy and rap the top of the air cleaner.

Holes will eat into both and the noises will get louder.

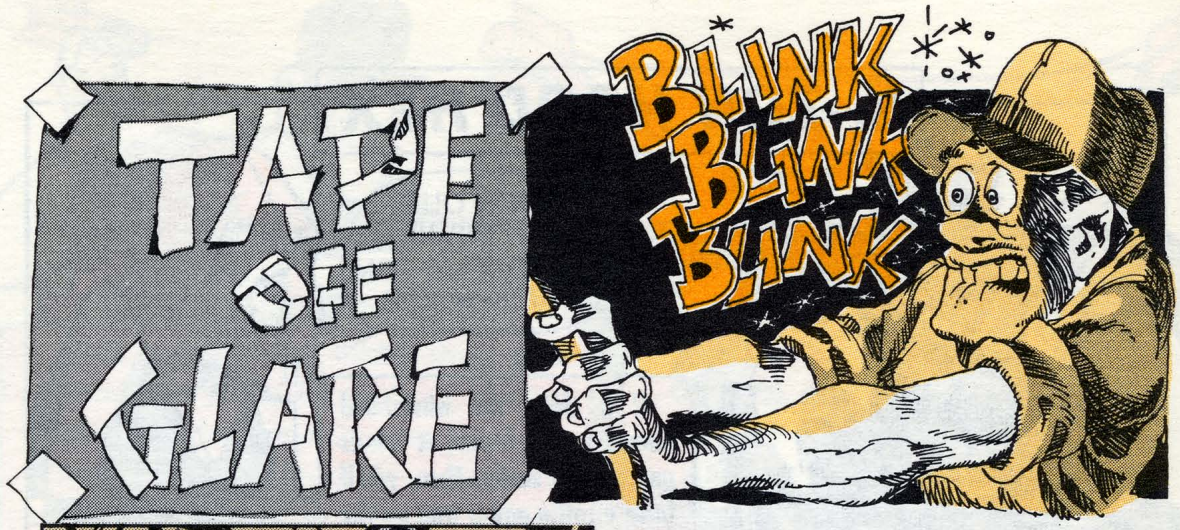
It could fly up in your face at anytime.

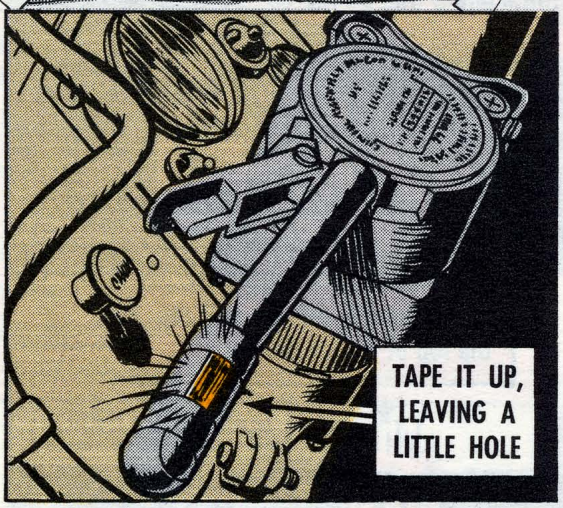
OK, OK, so you're no hood mangler, but if you've got one of these animals, act fast.

You need to straighten the hood or maybe shim the grill also to stop the racket and rubbing. Either fix should do it.



Then, ple-e-e-se, take it easy.





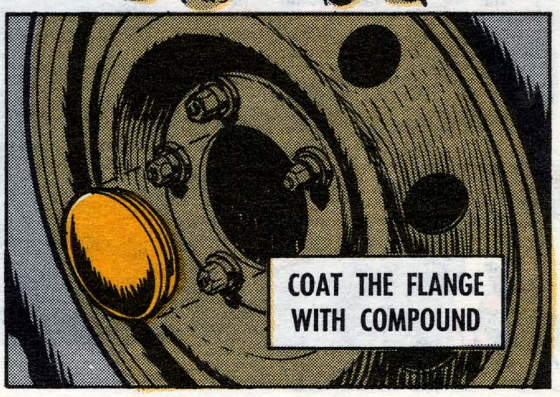
Are you blinded by your truck's turn signal indicator light during night driving? On the M151-series 1/4-ton trucks, especially, the reflected glare in the windshield may hit you right in the eyes.

If it's a problem, tape it. Use masking tape or whatever tape's available. Leave a peep hole—just enough so you can see the light when it's flashing.

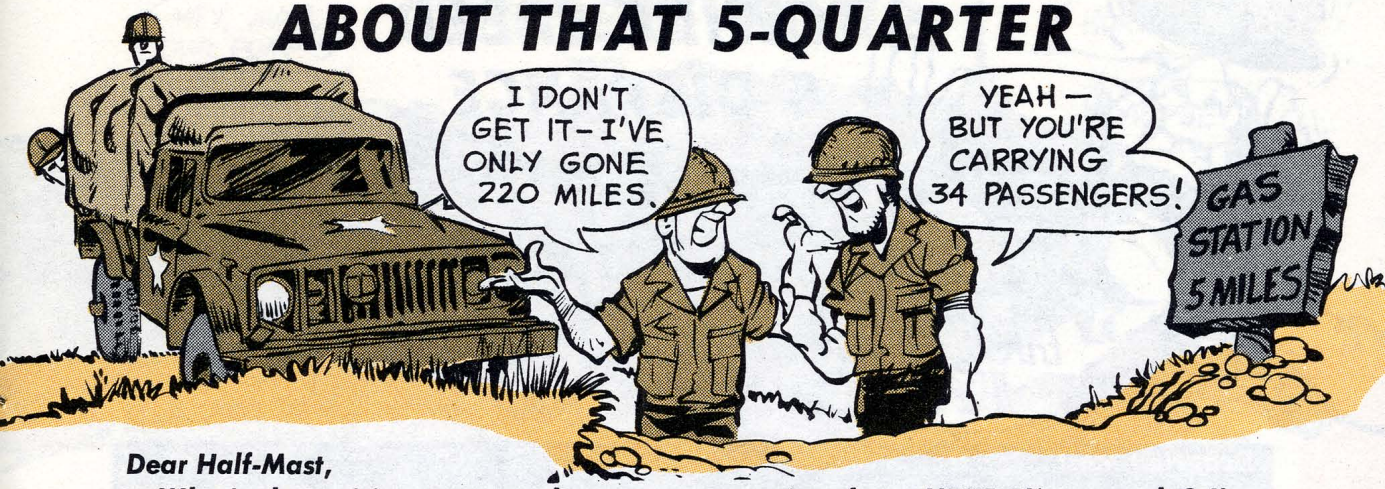
Take tape off for daylight driving.

M416 TRAILER TIP

Why let your M416 1/4-ton trailer suffer from rusted wheel bearings? If water's getting in there, just wipe a thin coat of sealing compound (FSN 8030-081-2339) around the outside of the hubcap flange after lubing your bearings. Then press the cap back into the hub. That's the word in Article 42, TB 750-981-4 (Oct 69).



ABOUT THAT 5-QUARTER



Dear Half-Mast,

What's the cruising range and passenger capacity of our M715 1¼-ton trucks? I've checked TM 9-2320-244-10, TM 9-500 and TB ORD 639—no luck.

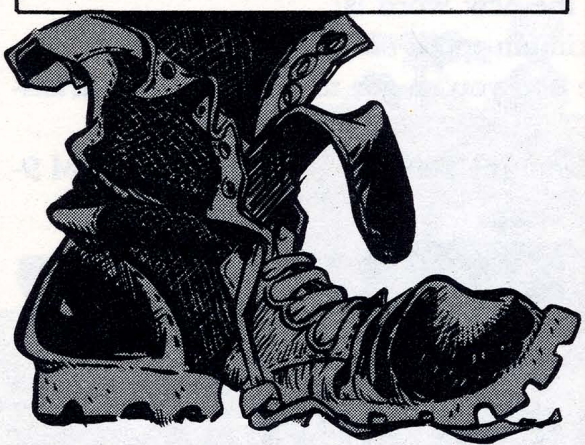
CPT J. D. G.

Dear Captain J. D. G.,

Cruising range (on highway) is 225 miles. Passenger capacity is 2 (including driver) in the cab and 8 in the cargo body.

Half-Mast

SUB FOR BOOT



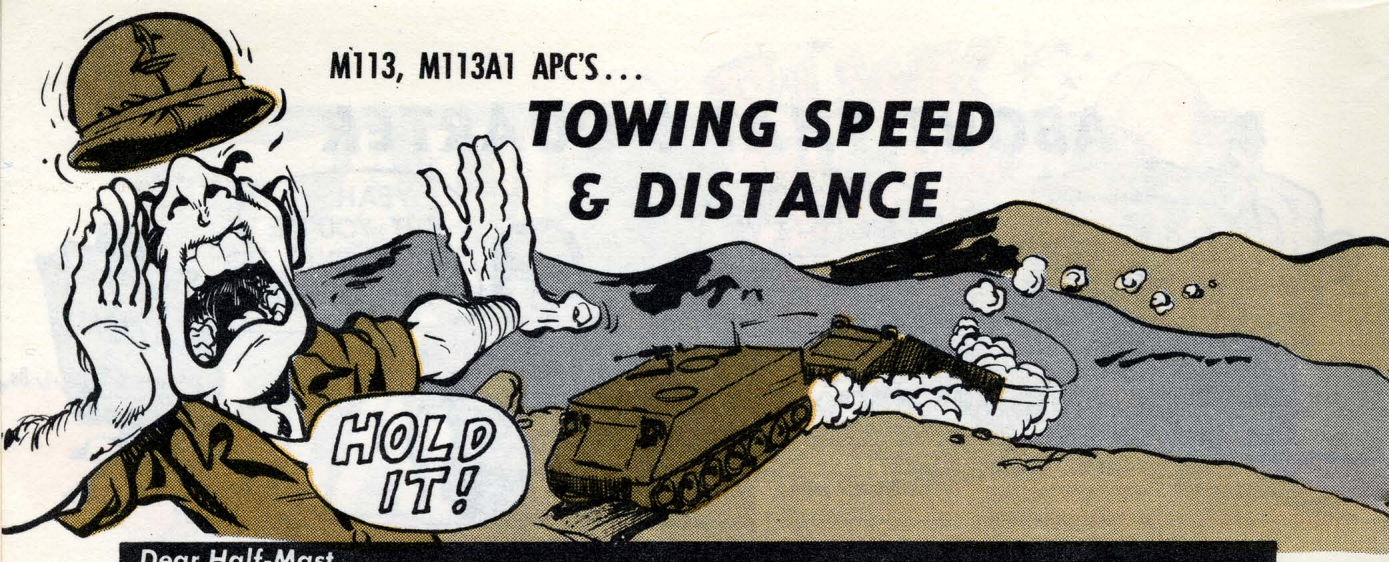
If you need a new handbrake cable or boot for your G742-series 2-1/2-ton truck, you have to get 'em together with FSN 2530-693-0599, in TM 9-2320-209-20P w/Ch 1 & 2 (Apr 69). But if the boot's all you need, get Bellows, rubber, FSN 2520-632-4057. It's in TM 9-2320-213-20P (Aug 63) and is normally used on the clutch pedal setup of the 1/2-ton utility platform truck (Mule).

RECHECK WITH SUPPORT

So you've ordered Unit, air hydraulic, FSN 2530-040-2188, for use on your 2-1/2-ton G742-series trucks . . . and ended up empty-handed as there was no-stock-on-hand at the NICP level. What to do? Ask your support to assist by repairing the unit with Kit, Repair, hydraulic slave, FSN 2530-040-2190.

M113, M113A1 APC'S...

TOWING SPEED & DISTANCE



Dear Half-Mast,

There's conflicting info floating around on towing a disabled M113 or M113A1 personnel carrier. The main point is maximum speed and distance the vehicle can be towed without disconnecting the transmission from the differential.

What's the latest word?

MSG B. D. V.

Dear Sergeant B. D. V.,

The latest word—and the right word—on the M113A1 (and all others in the M113A1 family) is in para 2-124b, TM 9-2300-257-10 w/Ch 1 (Feb 70):

Maximum distance of 30 miles at maximum speed of 10 MPH.

For all vehicles in the M113 family, the new word is:

Maximum distance of 5 miles at maximum speed of 7 MPH.

Anything farther or faster than these and you've got to disconnect the transmission from the differential.

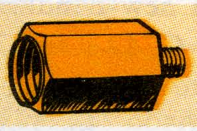
For the M113, this's quite a switch from the poop now on page 42 of TM 9-2300-224-10 w/Ch 2, 5 & 10 (Aug 69).

M113A1
MAXIMUM DISTANCE — 30 MI
MAXIMUM SPEED — 10 MPH

M113
MAXIMUM DISTANCE — 5 MI
MAXIMUM SPEED — 7 MPH

Half-Mast

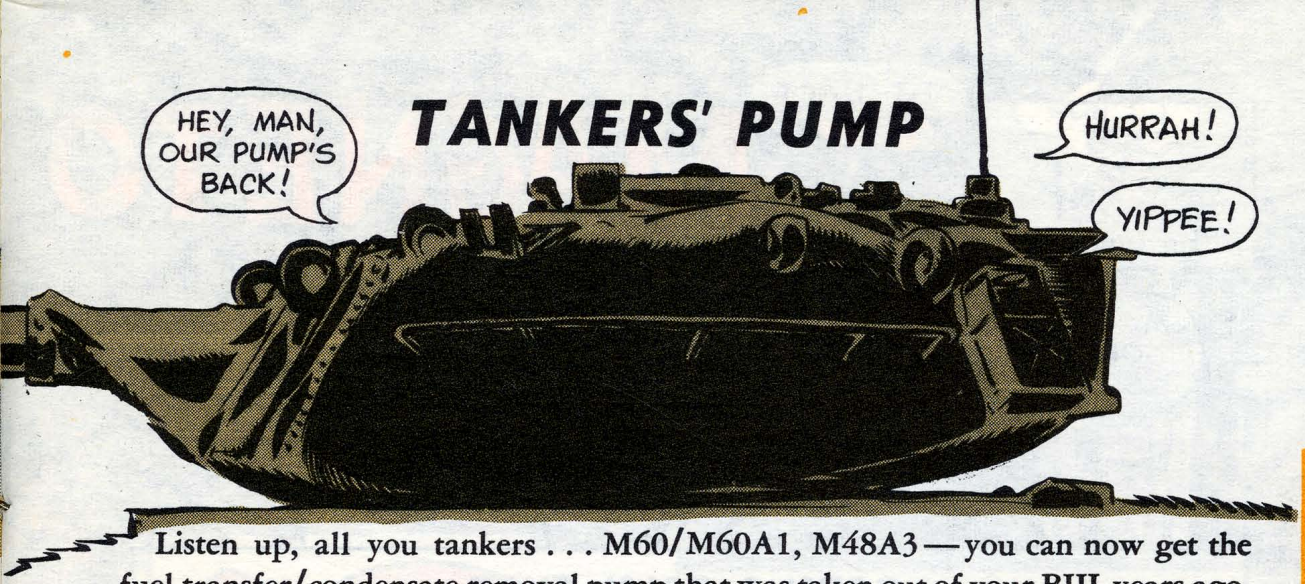
TORSION BAR ADAPTER



For removing torsion bars on M48-series tanks, M60 and M60A1 tanks, the M88 TRV, and the M728 CEV, there's only one adapter that'll fit into the end of the torsion bar . . . that's Adapter, puller, FSN 5120-322-5953, Part No. 7083703.

You'll find a few foul-ups in the -20 TM's on this special tool that'll cause you to end up with the wrong tool—or no tool. So stick to the above number and you'll get what you need.

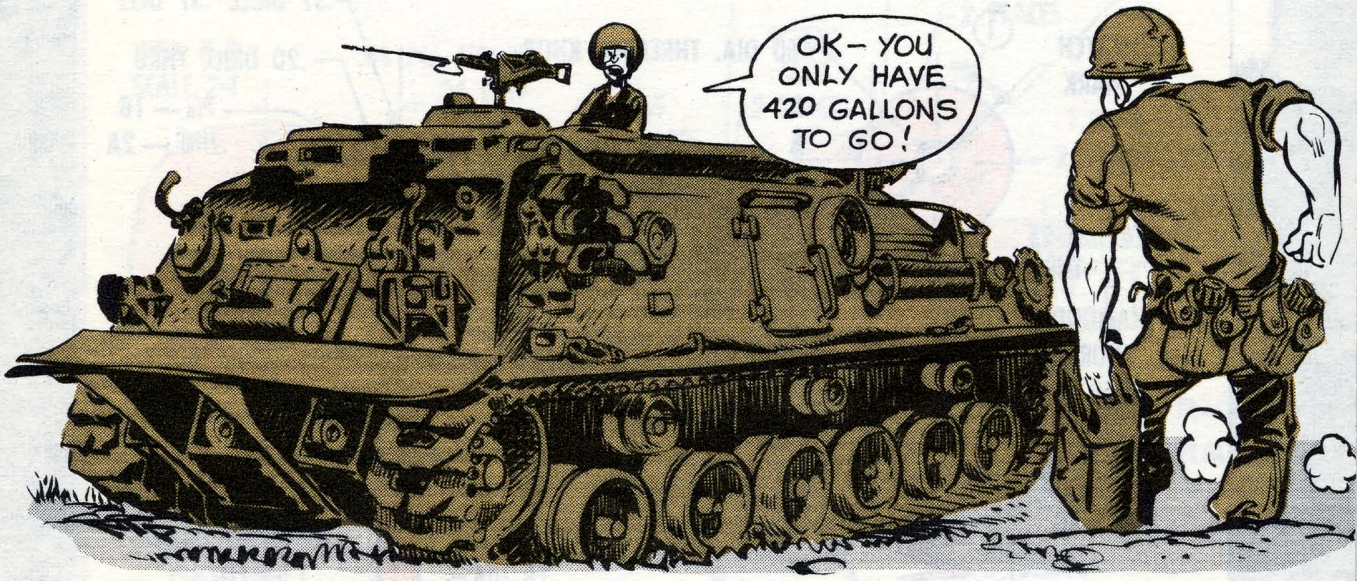
TANKERS' PUMP



Listen up, all you tankers . . . M60/M60A1, M48A3—you can now get the fuel transfer/condensate removal pump that was taken out of your BIIL years ago.

Ask for Pump, Dispensing, Hand Driven: Diaphram, FSN 4930-735-7745 as listed in SB 700-20 (Jun 70), Appendix B, page B-35. (It is due to be dropped from SB 700-20 and added to SB 700-50.) It's an expendable item issued 1 per tank platoon and 1 per maintenance section in tank companies. Your supply can get it by using RIC S9C.

M88 VTR FUEL CAPACITY

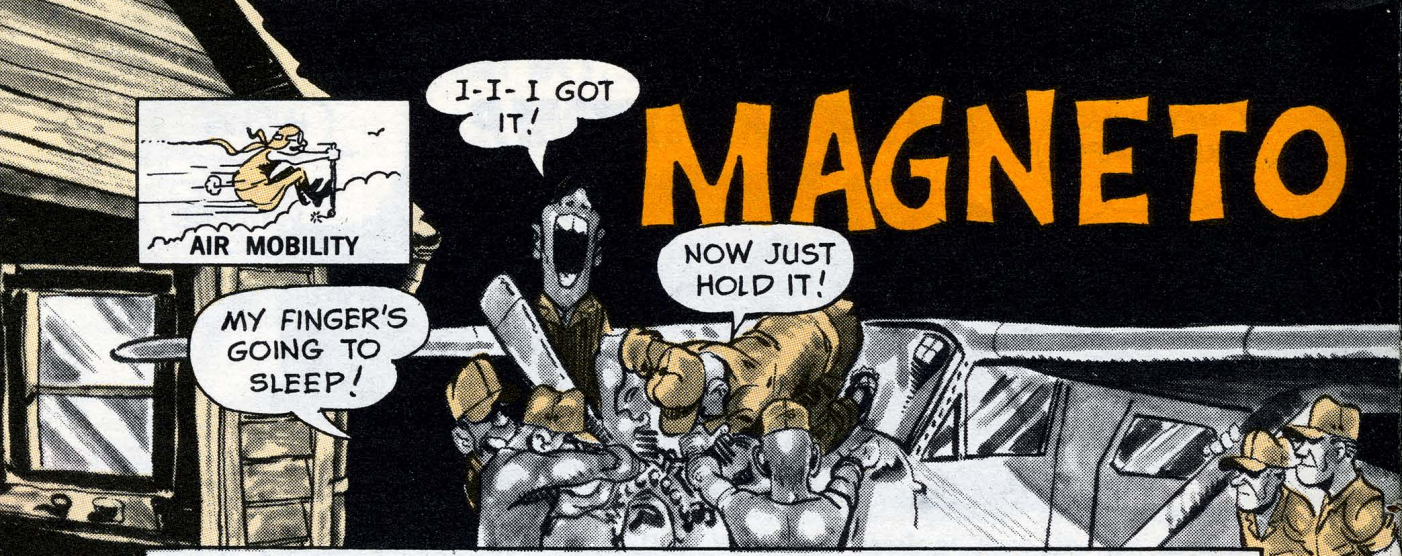


How many gallons of gas does it take to fill the tanks on an M88 VTR? TM 9-2320-222-10 (Apr 66) says 252 gallons, TM 9-2320-222-20 (Aug 66) says 452 gallons, and TM 9-500 (Sep 62) says 445 gallons.

Which is right?

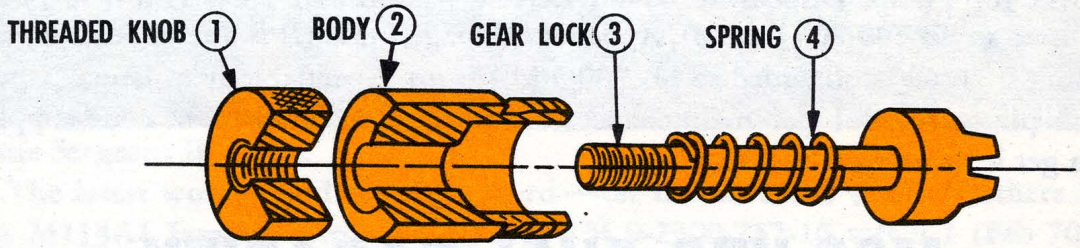
The correct figure is 425 gallons and that's how much they would take if you ran out of gas.

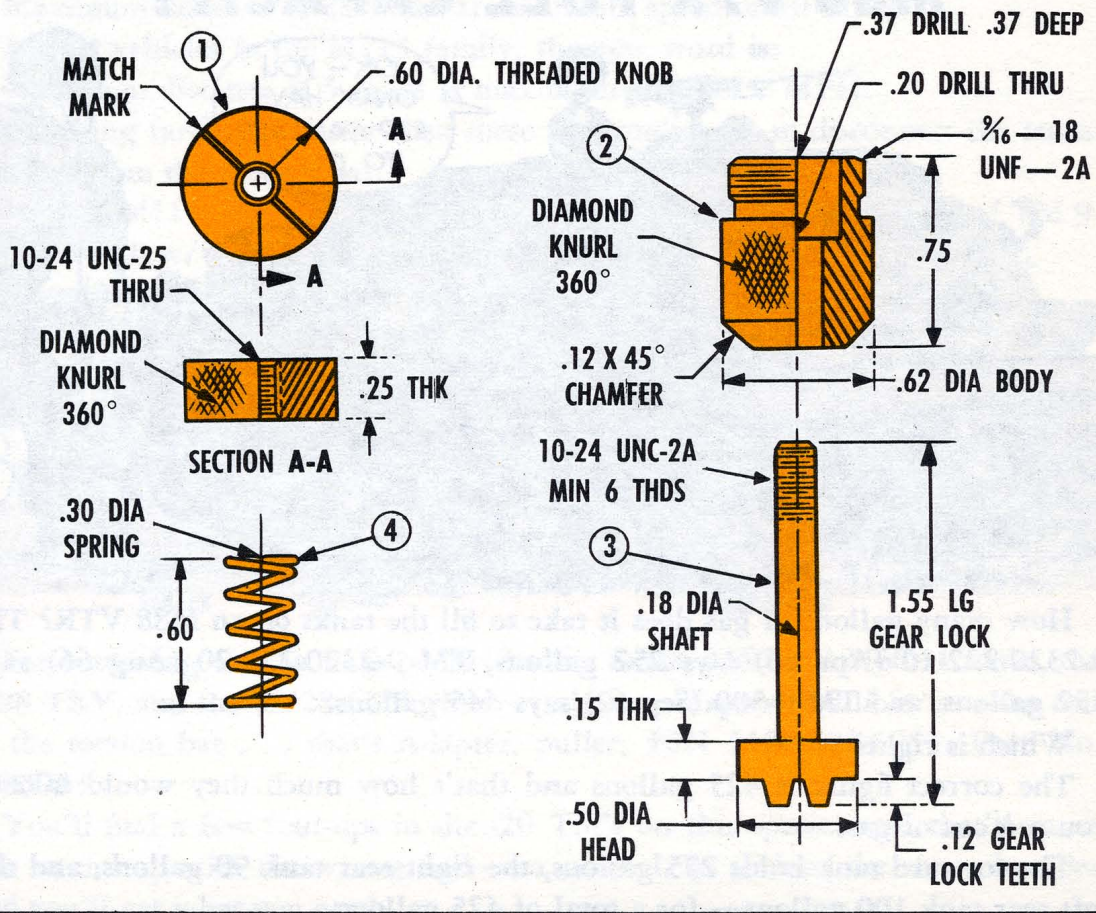
The forward tank holds 235 gallons, the right rear tank 90 gallons, and the left rear tank 100 gallons—for a total of 425 gallons.

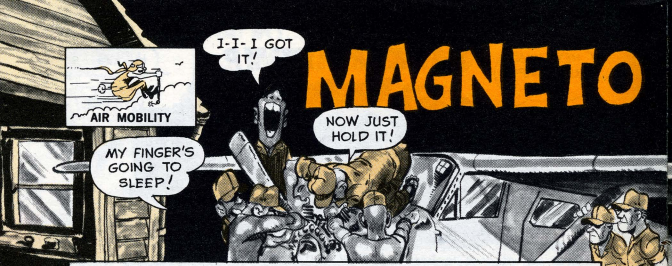


MAGNETO

S6RN & S6LN TYPE







MAGNETO GEAR HOLDER

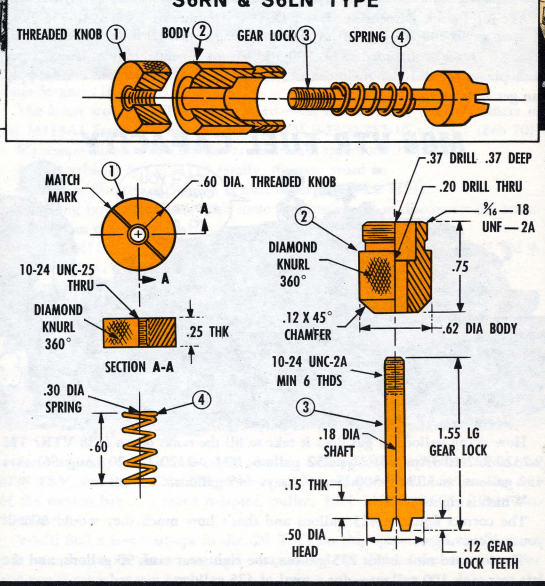
Dear Editor,

Anybody who has been around recip engines knows that scouting up a tool to hold the gears in place when installing a bench timed magneto is like looking for hen's teeth. There's no such animal in the tool sets.

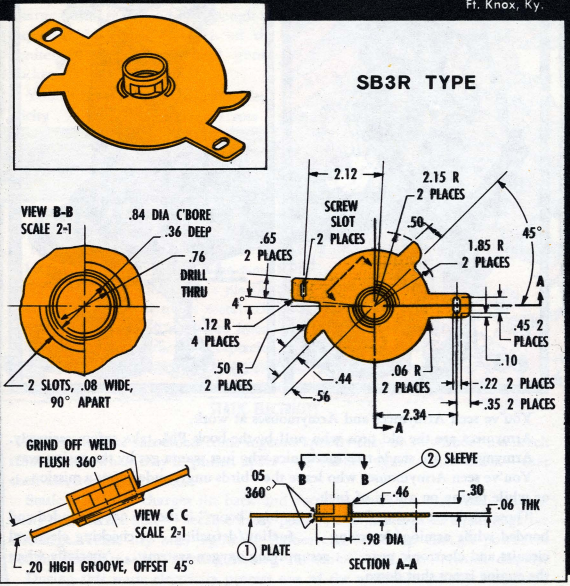
So, here're a couple of tools I made which will hold the E-gap on any recip in the Army inventory—for the SB3R, S6RN and S6LN mags.

SP5 N. Dillon
Ft. Knox, Ky.

S6RN & S6LN TYPE



SB3R TYPE



(Ed Note—Great! Some holding tools issued by the Air Force are still around but are hard to come by. Your tools fill the bill.)

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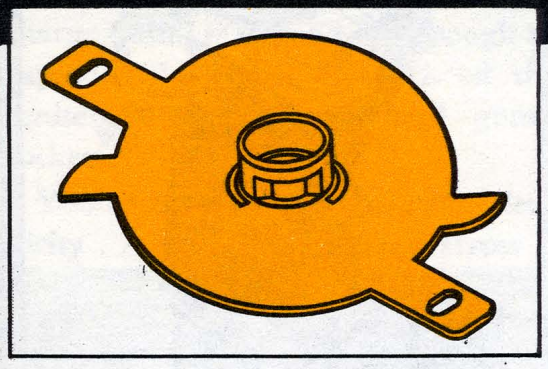
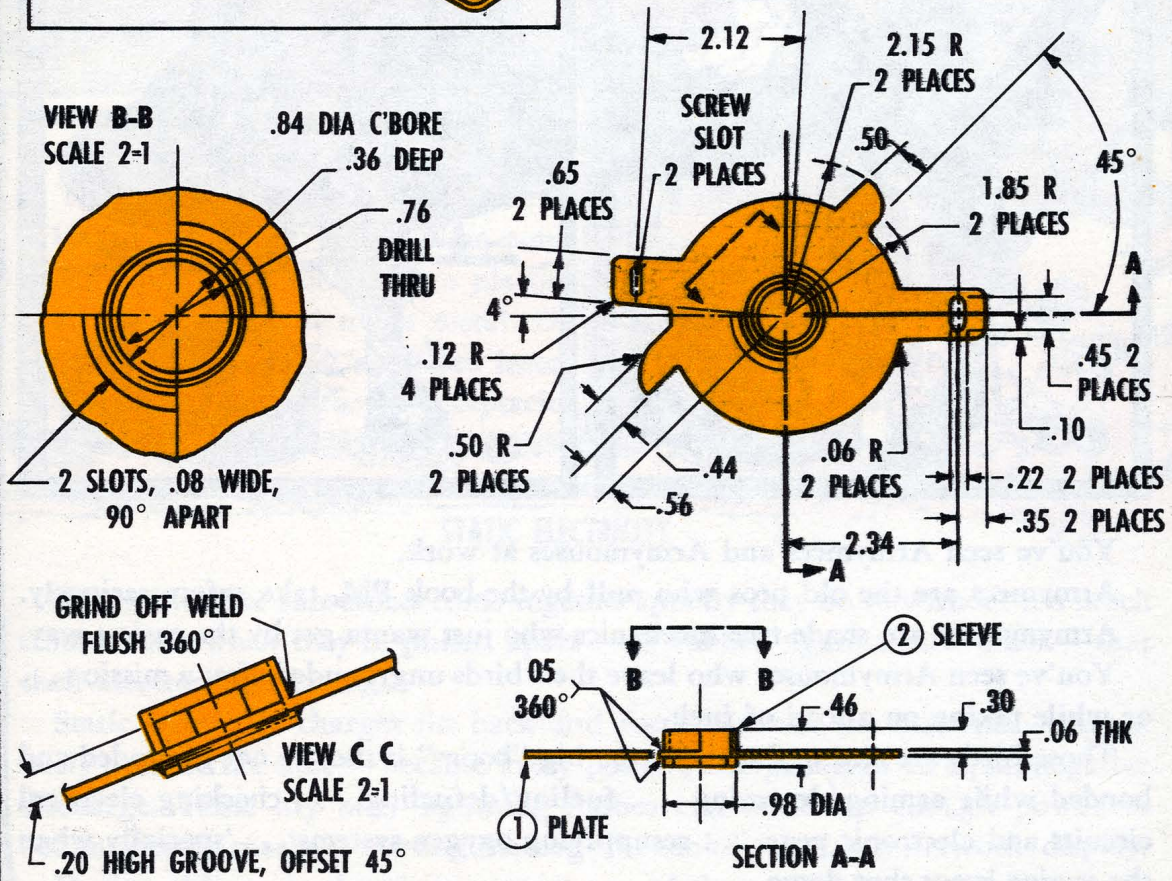


SB3R TYPE



(Ed Note—Great! Some holding tools issued by the Air Force are still around but are hard to come by. Your tools fill the bill.)

You've seen Armymecs and Armymouses at work.

Armymecs are the old pros who pull by-the-book PM, take safety seriously.

Armymouses are shade-tree mechanics who just wanta get by the easiest way.

You've seen Armymouses who leave their birds ungrounded after a mission . . . or while taking on a load of fuel.

Those birds are sitting ducks for the big "boom" if they're not grounded and bonded while arming/dearming . . . fueling/defueling . . . checking electrical circuits and electronic gear . . . resupplying oxygen systems . . . 'specially when the engine is not shut down.

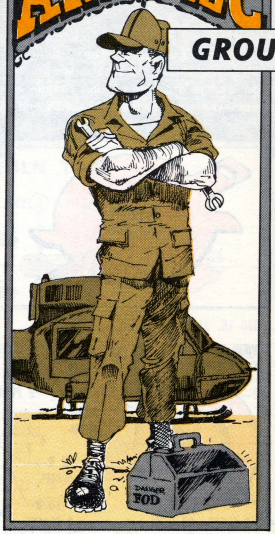
Why?

Static electricity . . . ready to go knockin' and shockin'.

LIGHTNING KILLS...

ARMYMOUSE

ARMYMEC



GROUND

You've seen Armymecs and Armymouses at work.

Armymecs are the old pros who pull by-the-book PM, take safety seriously.

Armymouses are shade-tree mechanics who just wanta get by the easiest way.

You've seen Armymouses who leave their birds ungrounded after a mission . . . or while taking on a load of fuel.

Those birds are sitting ducks for the big "boom" if they're not grounded and bonded while arming/dearming . . . fueling/defueling . . . checking electrical circuits and electronic gear . . . resupplying oxygen systems . . . 'specially when the engine is not shut down.

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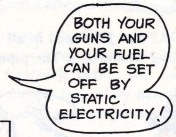
SO CAN LITTLE SPARKS

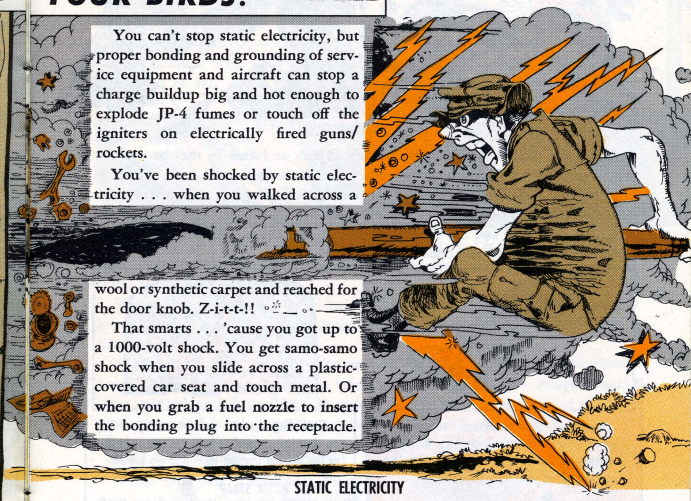


YOUR BIRDS!

You can't stop static electricity, but proper bonding and grounding of service equipment and aircraft can stop a charge buildup big and hot enough to explode JP-4 fumes or touch off the igniters on electrically fired guns/rockets.

You've been shocked by static electricity . . . when you walked across a wool or synthetic carpet and reached for the door knob. Z-i-t-t-!! ◦ ◦

That smarts . . . 'cause you got up to a 1000-volt shock. You get samo-samo shock when you slide across a plastic-covered car seat and touch metal. Or when you grab a fuel nozzle to insert the bonding plug into the receptacle.



STATIC ELECTRICITY

When 2 unlike substances come together quietly they do so without too much trouble. It's when they're pulled apart — or rubbed against each other — that their electrons get excited.

Static electricity charges flit back and forth between the materials — harmlessly most of the time — because every positive charge means an equal negative discharge. These itty bitty lightning flashes can build up enough power to become deadly sparks . . . setting the stage for a mini-4th of July fireworks display.

During this static electricity process one of the materials usually becomes a poorer conductor, or insulator of current, than the other.

This is the case with fuel flowing thru the pipe to the aircraft. The high

PS MORE

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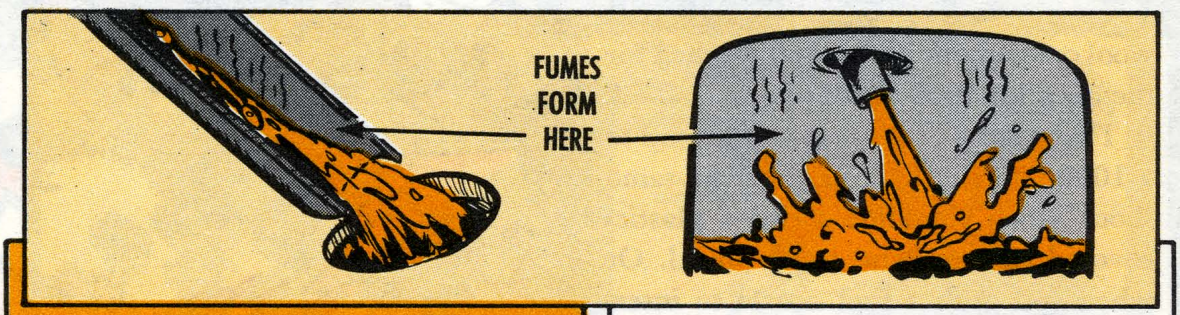
P.S MORE

quality AVGAS and JP-4 used in all U.S. branded birds are negative charged, but outstanding conductors. The pipe is a positive charged, poor conductor.

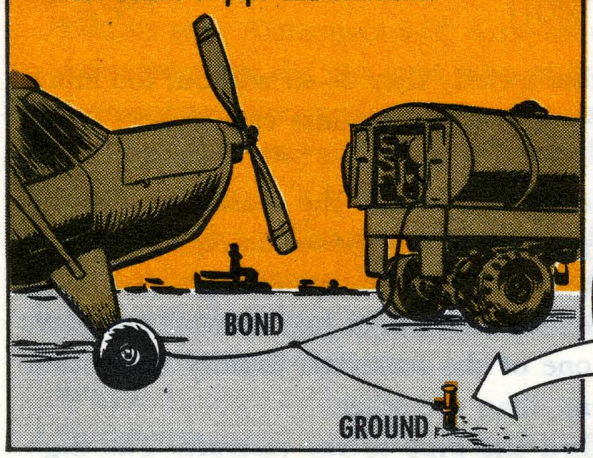
FUELING/DEFUELING

You always have some explosive-ready vapors or fumes in the space above the flowing fuel and the top of the hose, and in the space above the liquid in the receiving and dispensing tanks. Only an electrostatic spark—or a stray electrical current—is needed to set off an explosion. Unless . . .

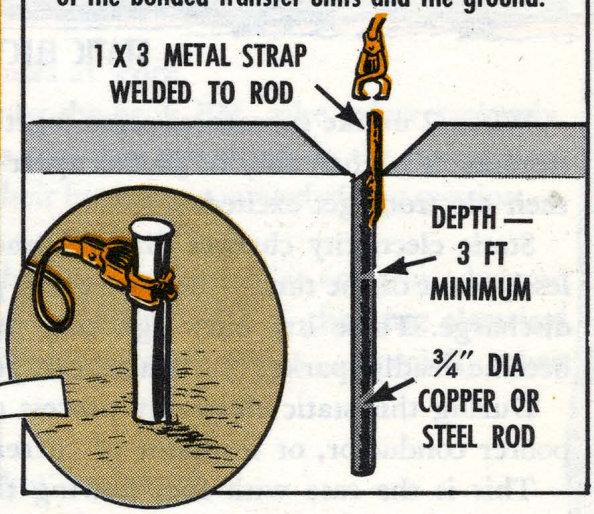
Unless your bird and the service equipment—at either fixed bases or at miniports—are grounded and bonded.



Bonding — which equalizes voltage — is wiring between metallic containers, thru hose sections from coupling to coupling, or between hose nozzle or pipe and container.



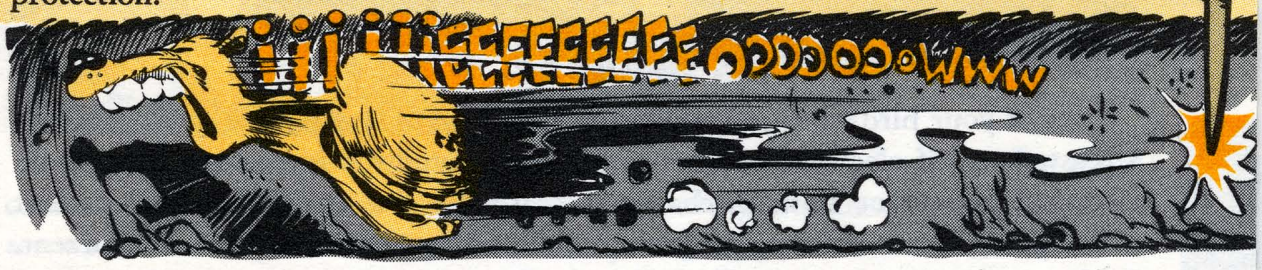
Grounding — which reduces voltage — is an electrical connection between one or both of the bonded transfer units and the ground.



Grounding and bonding reduce electrostatic sparking—by furnishing the charges a leak-away path. Like when you pick up a fuel nozzle be sure you insert the bonding plug in the aircraft receptacle before you insert the fuel nozzle into the filler neck. This lets any charges leak away harmlessly. That's why it's important to use bonding and grounding when your bird is groundbound.

When your aircraft is grounded, the electrical charge or current follows a path of least resistance . . . thru the airframe . . . ground wire . . . ground rod . . . and into Mother Earth—with its stinger removed.

Skid-mounted birds offer some advantage over rubber wheeled types, but not enough to be safe. They still need a ground rod hookup for best electrostatic protection.



JP-4, used in turbine engines (Hueys, Mohawks, etc.) is more dangerous than AVGAS that's used in recip engines (Beavers, Seminoles, etc.). It generates static electricity easier and quicker.

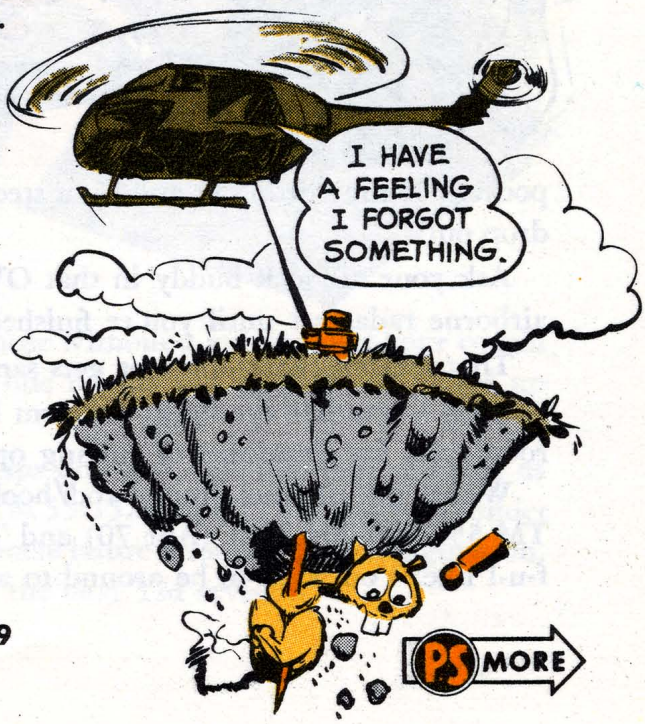
Without a safe ground rod and hookup (TM 10-1101, Jul 65) when the sparks jump, the fumes can ignite and your unit's gonna look like it's engaging in a Chinese fire drill.

Old mini-gun barrels stuck in the ground won't hack it as ground rods; clamps hooked to the revetment supports won't help one bit; nor will clamps hanging onto **painted** bird skins. The TM says use a 4-ft solid copper or steel rod with a minimum of 3-ft going into the ground.

DON'T GAMBLE WHEN YOU SCRAMBLE!

When Ops yell, "Scramble! Pilots man your planes!", or an Eagle flight leader hollers, "Get 'em going!", take a coupla seconds to unhook the ground wire alligator clamps or pull the male plug out of its receptacle.

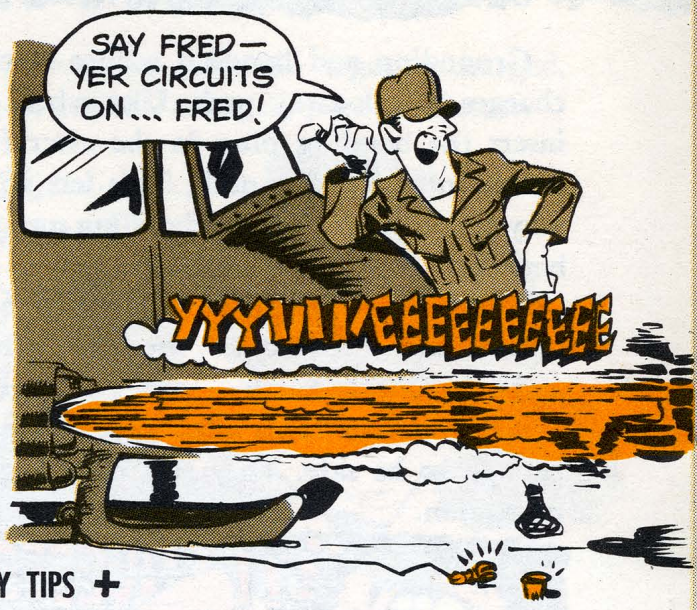
No sense having an unhooked wire snap in two and wind up in a prop or rotor. Or leaving busted wire and clamps on the ramps for FOD fodder. Or having a bird groundbound with a snubbed wire.



ARMING/DEARMING

It only takes half a volt of electricity to get a 2.75-in rocket outta socket and on its way.

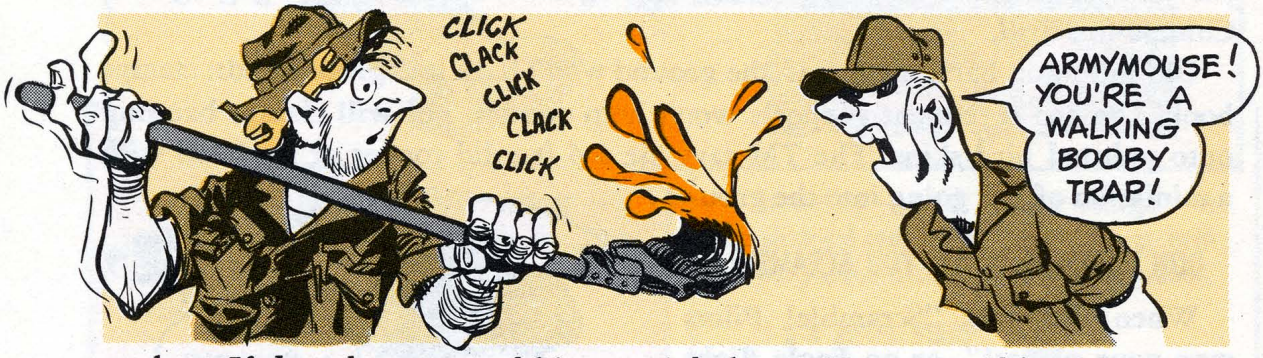
A maverick electric current in the avionics or electrical circuits could set off a minigun or a rocket. So could a high frequency radio signal or high powered radar beam. All avionics and electrical circuits should be OFF . . . and kept OFF . . . while you're handling ammo.



+ SAFETY TIPS +

Even if your bird's ground hookup is according to Hoyle a hot spark can start a blastoff . . . if electrical resistance thru the ground rod is too high. Heat in an electrical current or static discharge increases by the amount of resistance it meets going from airframe to ground rod and by the amount of the current. So, keep your ohmmeter handy and make frequent electrical continuity checks. You want resistance as low as possible—10,000 ohms is the maxi-limit. More'n this and the rod gets the heave-ho.

Metal taps on your shoes are taboo, Armymouses. Same goes for metal bound mops, brooms. Keep loose metal items, cigarette lighters, tools, etc. out of shirt



pockets. If they drop out and hit a steel deck or PSP you could be a permanent drop out!

Ask your air jock buddy in that OV-1D on your airfield not to turn on his airborne radar set until you're finished fueling or arming.

That ground radar operator gets same-same request.

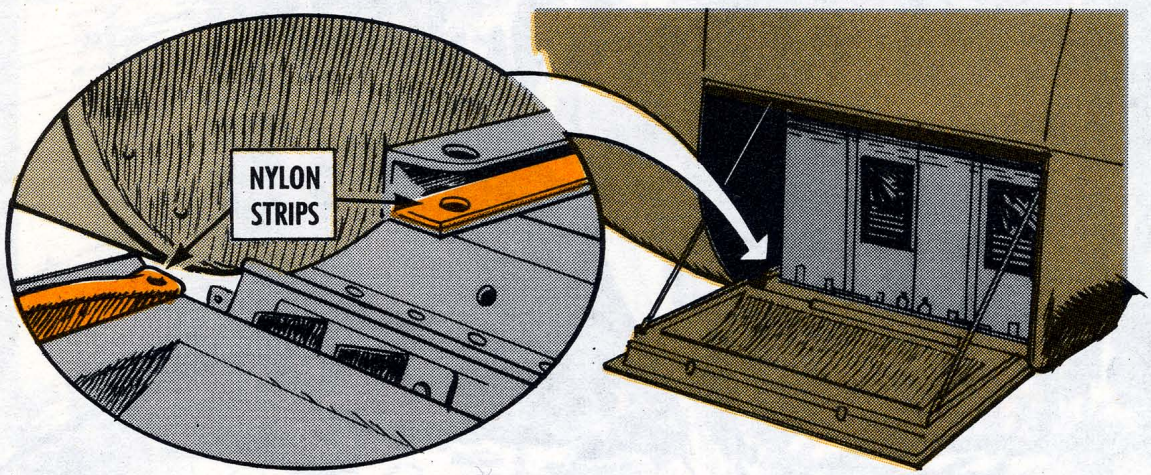
Keep a weather eye open. A storm build-up within 3 miles of your fueling roost calls for shutdown of fueling operations.

Wanta get all your ground rod/hookup shavings in one bag? Get a copy of TM 55-1500-204-25/1 (Apr 70) and TM 10-1101 (Jul 65) and read 'em c-a-r-e-f-u-l like. You want to be around to ask Shortimer Sam about your turtle.

Nylon strips on the Snake's ammo storage door track take a beating from constant use and ammo weight. When strips are gone, ammo rack slides on screws . . . chewing the metal glide assembly to bits.

Chewed up strips jam the ammo rack's smooth, easy in-out ride . . . slows down arming-rearming to cold molasses speed.

These strips are expensive—$8.91 each—so on your PMD keep a sharp eye on 'em. Any sand, dirt, gritty stuff, metal on the track gets the heave-ho, pronto! And don't forget the ammo rack track inside the Snake.



If you find a strip sagging like a nylon hose without a garter, alert your cousin in direct support. He'll see that you get one f-a-s-t, and you won't be held up helping those grunts in the bush.

If your Supply Cuz doesn't have the strips on hand, tell him they're listed as rubber strip assembly, item 21, fig 16a, TM 55-1520-221-35 P-1 (May 70) under FSN 1560-119-1170. If **rubber** in the nomenclature stretches your imagination, don't snap it. It'll show up as **rub strip** in the next TM revision.

ASOAP— On the Army's Spectrometric Oil Analysis Program

HOW'S YOUR

DIRTY GOOFS

The most common goof-up is leaving info off the form.

It makes a heap o' difference if the bird's serial number is missing, or if the sample came from an OV-1's No. 2 engine, and you didn't say so. Here're a few of the goofs that have fouled up component records.

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Unit designation number left out.

More'n one oil sample jar was mailed with a single Form 3253.

An **empty** oil sample jar arrived at the lab.

A dirty oil sample — mud, dirt, sand — was sent in.

A week's R & R — maybe longer — went down the drain between the time the sample was taken and when it was mailed.

The 12½-hr (for turbine) and 25-hr (for recip) engine sample taking periods were grossly ignored.

A **blank** Form 3253 arrived with a sample bottle.

SOAP TIME

When you take the next sample start with a copy of your bird's logbook and TB 55-6650-300-15 (Aug 70). Use 'em as you fill out DA Form 3253 and you'll see how basic your role is.

You can use a stamp, print, or typewriter to fill out the form, Knucklebusters.

PS MORE

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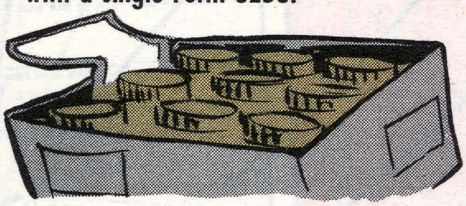

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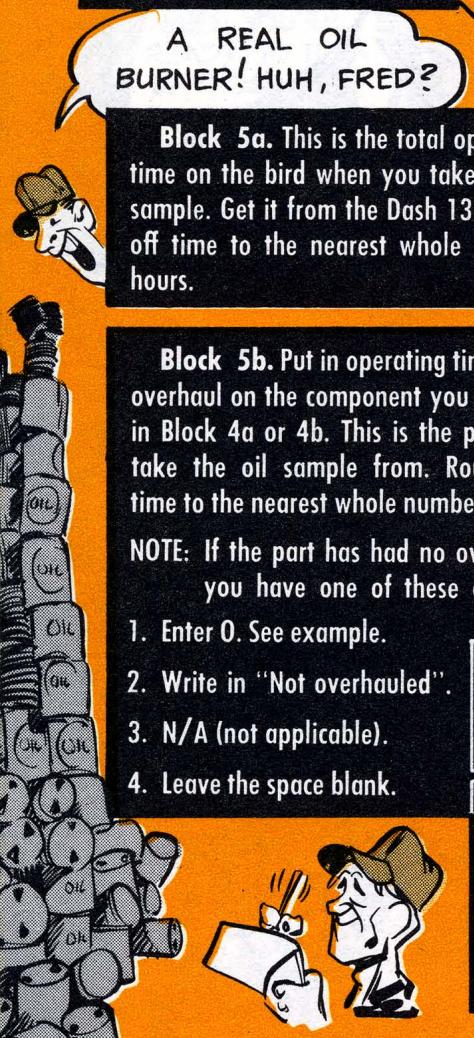
Block 1. Be sure to include your unit's full address. This means state, fort, camp or APO number because the lab may need to get in touch with your unit by TWX or air mail. Don't forget your unit's identification number and your operating unit.

Block 3a. What kind of aircraft did you take the sample from? U-6A? UH-1B? U-21A? OV-1C? Be exact. Writing in "LOH" or "HUEY" won't hack it.

Block 3b. Put in the full aircraft serial number. Tail numbers or shorty radio call numbers aren't enough. Get your bird's flock number from the Dash 13.



Block 5a. This is the total operating time on the bird when you take the oil sample. Get it from the Dash 13. Round off time to the nearest whole number hours.

Block 5b. Put in operating time since overhaul on the component you entered in Block 4a or 4b. This is the part you take the oil sample from. Round off time to the nearest whole number hours.

NOTE: If the part has had no overhaul, you have one of these choices:

1. Enter 0. See example.
2. Write in "Not overhauled".
3. N/A (not applicable).
4. Leave the space blank.

Block 5c. Enter the time since last oil change. Get this info from Dash 13.

Block 5d. Enter the amount of oil your bird has used since last oil sample was taken. Check thru the daily record back to last 25-hr inspection. If you didn't add any oil, enter 0.

Now down in the remarks block put the time since new of the part listed in Block 4a or 4b. This info will be a big help to the ASOAP lab-ticians.

Remarks block. If you have or have not made any entries in this block explaining any action on any item already entered, take ten . . . then

Write in any information that you feel would be helpful to the person who checks the oil sample. Add the phone number for your maintenance office, in case the lab has some hot poop on a sample.

USED OIL

A. Sampling Procedure: TUE ... TG (Recommended)
1. Sample should be taker ... efore oil is added as instr
in TB 55-6650-300-15 S ... ctrometric Oil Analysis.
2. Insert plastic tube abou ... alfway in oil filler neck.
3. Place finger over upper ... d of tube, withdraw the tu
and let oil drain into the ... ample bottle. Bottle shou
filled to within 1/2 inch ... m top.
4. Discard the sampling tub ... do not attempt to clean a
reuse.
5. ...ill out this form complete ..., making sure that all
...tted spaces are filled i ... accurately.
6. At...h this form to the sam... e bottle with a rubberba

1. OPERATING UNI ... Include Unit Iden ... ation Code)
USAARMC ... AVN OFFIC... WOUXIT

3. AIRCR... ... RIAL NO
U-6A | 57-6159

5. TIME
AIRFRAME TIME: 3438 hrs | b. TIME SINCE OVERHAUL: 0
c. TIME SINCE OIL CHANGE: 22 hrs | d. OIL CONSUMPTION SINCE LAST SAMPLE: 17 qts

6. REASON FOR SAMPLING
[X] a. 25 HOUR (Routin...
[ ] b. SPECIAL I... EQUEST
[ ] c. PRIOR ... OIL CHANGE
[ ] d. ...BOOST
[ ] e. OVERSPEED
[ ] f. PRIOR TO MAI... PARTS (Explai...
[ ] g. COMPONENT ...

7. M... TENANCE PERFORMED SINCE LAST SAMPLE
[X] a. NONE
[ ] b. OIL CHANGE
[ ] c. COMP EVALUATION
[ ] d. CYLINDERS RE...
[ ] e. BEARINGS REF...
[ ] f. OTHER (Identify...

8. SAMPLI...
a. METHOD: [ ] TUBE [X] DRAIN
b. SAMPLE TAKEN BY: Robert M. Cameron,

REMARKS (Continue on Reverse if Necessary)
5b. A/C has 806 hrs on engine since new.
Maintenance office phone Ft. Knox 4-2254

DA FORM 1 MAR 68 3253 REPLACES EDITION OF 1 JUN 67

Block 1. Be sure to include your unit's full address. This means state, fort, camp or APO number because the lab may need to get in touch with your unit by TWX or air mail. Don't forget your unit's identification number and your operating unit.

Block 2. Double check your unit's zip code.

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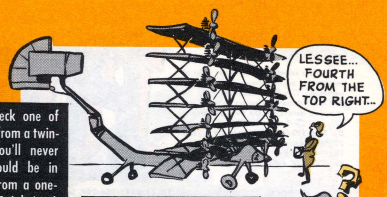
Block 4a. You must check one of these boxes if the sample is from a twin-engine bird. Otherwise, you'll never know which oil burner could be in trouble. If your sample is from a one-fan job, check box Number 1 (obvious) or leave both boxes blank.



Block 4b. You must check one of these boxes ONLY if your sample is from a fling-wing bird.

Block 4c. Get this number from the Dash 16.

Block 5a. This is the total operating time on the bird when you take the oil sample. Get it from the Dash 13. Round off time to the nearest whole number hours.

A REAL OIL BURNER! HUH, FRED?

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Block 6. You must check one of these boxes. If you check box F, G, or J, explain in the remarks block.

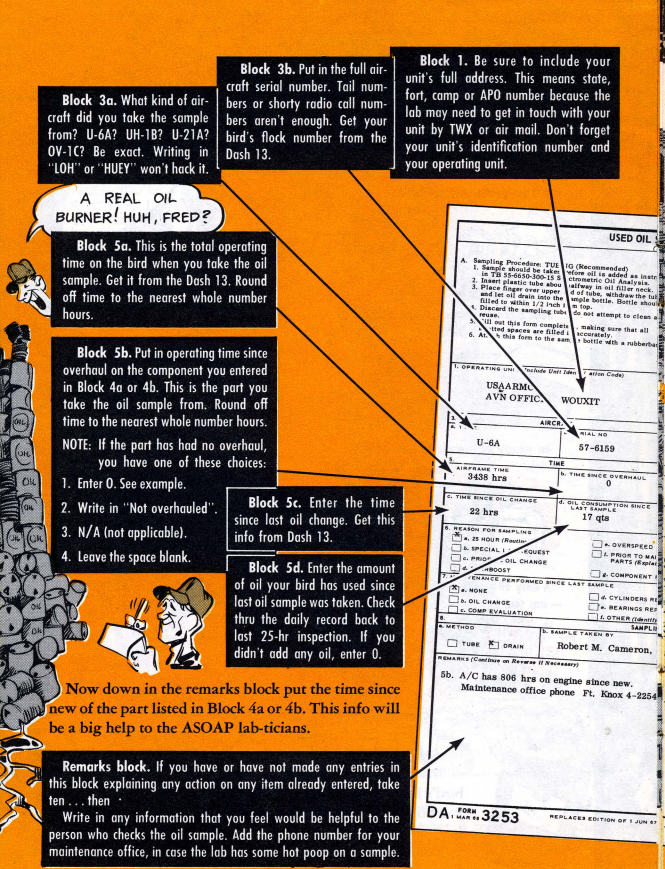
MY NAME? MY NAME! I KNOW... IT'S IN MY WALLET. THERE'S A PICTURE OF MOM.

Block 7. Check bird's daily record for past 25 hours for any maintenance that would affect the component you took the sample from.

Block 8a. You must check one of these boxes. Just be sure it's the right one.

Block 8b. You took the sample, so write in your name.

Block 8c. Don't hesitate . . . enter the date you took the sample.



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DRY OFF CHECK OFF LIST

- ☐ You have the oil sample. Bottle cap on tight.
- ☐ Form 3253 is filled out fully and completely.
- ☐ You have one Form 3253 for each oil sample.
- ☐ It's addressed and in the bag.

Send your SOAP oil sample to the lab assigned to you.

END

Block 2. Double check your unit's zip code.

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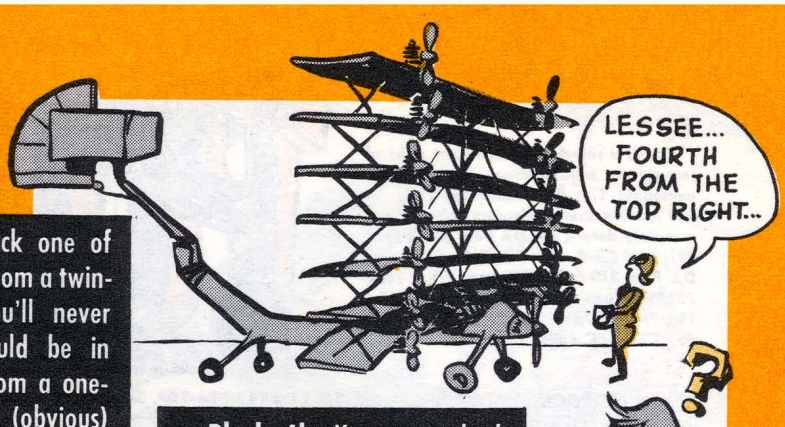

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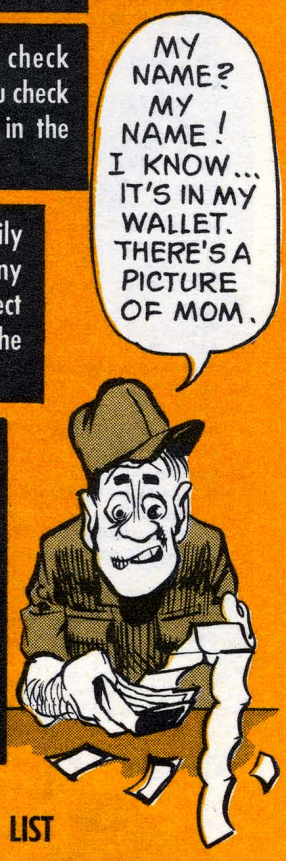

SAMPLE INFORM TION
FB 55-6650-300-15)

INSTRUCTIONS

B. Samplin used).
1. Same
2. Take
3. Using drain with th
4. Fill sa from to
5. Same a
6. Same a

Procedure: DRAIN sed when tubing cannot be
A.1.
quart container ng with sample bottle.
art container, st drain at least one pint from
lve to insure t NO sludge or dirt is submitted
oil sample.
ple bottle fr drain valve to within 1/2 inch
A.5.
A.6.

2. LOCATION (Ir de 2 Code)
Ft. Kno Ky 40121

4.
a. ENGINE — COMPONENT
[X] NUMBER 1 [ ] NUMBER 2

b. TRANSMISSION
[ ] MAIN [ ] COMBINING BOX
[ ] 90° #1 [ ] FWD
[ ] 90° #2 [ ] AFT
[ ] 90° T/R [ ] OTHER (Identify)
[ ] 42° T/R

c. COMPONENT SERIAL NO
42-18601

[ ] h. METAL IN OIL OR SCREEN
NT ON ANY OIL-WETTED [ ] i. AIRCRAFT CRASH
in Remarks) [ ] j. OTHER (Explain in Remarks)
EMOVAL (Explain in Remarks)

[ ] g. ENGINE REPLACED
PLACED [ ] h. COMPRESSION CHECKED
LACED [ ] i. INTERMEDIATE INSPECTION

SP5 Robert M. Cameron, SP5
c. DATE SAMPLE TAKEN
19 May 70

WHICH WILL BE USED.

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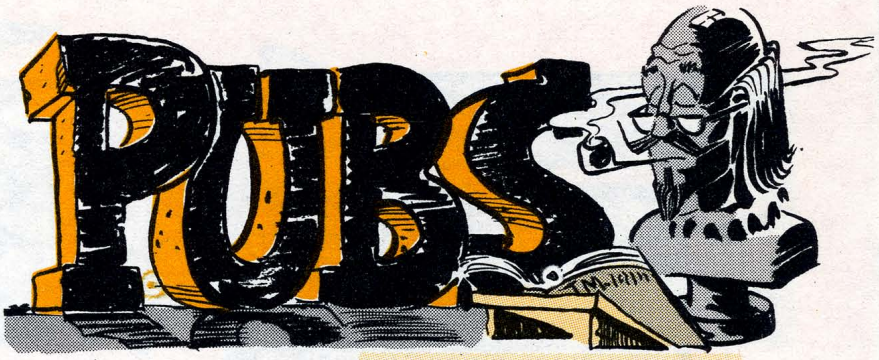
Send your SOAP oil sample to the lab assigned to you.

PS END



This is a selected list of recent pubs of interest to organizational maintenance personnel. This list is compiled from recent AG Distribution Centers Bulletins. For complete details see DA Pam 310-4 (Jun 69), and Ch 5 (Apr 70), TM's, TB's, etc.; DA Pam 310-6 (Jul 70), and Ch 1 (Sep 70), SC's and SM's; DA Pam 310-7 (Jul 70), MWO's; and DA Pam 310-9 (May 69), COMSEC Pubs.

TECHNICAL MANUALS

TM 1-IL-26-6, Sep All Fixed Wing.
TM 1-OH13-5, Sep OH-13.
TM 1-OH-23C-6, Oct OH-23.
TM 1-OH58-5, Sep OH-58.
TM 1-U8-5, Aug U-8.
TM 1-260, C3, Sep All Rotor Wing.
TM 5-765, Jun Elect Transmission.
TM 5-2410-227-20P, Aug Tracked Tractors.
TM 5-2805-201-20P, Aug 25 HP Outboard Motors.
TM 5-3431-216-20P, Jul Welding Equip.
TM 5-3431-225-25P, Aug Welding Equip.
TM 5-3655-211-15, Aug Gas Gen Plant.
TM 5-3805-209-20P, Aug Graders.
TM 5-3810-228-20P, Sep 20 Ton Truck Mtd Crane Shovels.
TM 5-3810-232-12, Sep 20 Ton Wheel Mtd Crane-Shovels.
TM 5-3820-233-12/1, Sep Rock Drilling Equip.
TM 5-3895-215-20P, Aug Bituminous Heaters.
TM 5-4110-205-20P, Sep 9,000 BTU Refrig Units.
TM 5-4110-229-24P, Sep 3,000 BTU Refrig Unit.
TM 5-4120-307-24P, Aug 18,000 BTU Air Conditioner.
TM 5-4310-251-14, Aug 15 CFM Air Compressor.
TM 5-4310-339-25P, Aug 15 CFM Air Compressor.
TM 5-4610-208-24P, Aug Water Purifi.
TM 5-4940-201-20P, Aug Shop Equip Set 2.
TM 5-6115-323-15, Sep 1.5 KW Gen.
TM 5-6115-332-12, Aug 15 KW Gen Set.
TM 11-5895-386-20P, Sep OV-1C.
TM 11-5895-578-12, Jul OV-1A-1B-1C.
TM 11-6660-204-25P, Aug Radiosonde Recorders AN/TMQ-5, AN/TMQ-5A, AN/TMQ-5B, and AN/TMQ-5C.
TM 11-6760-244-12, Oct OV-1A-1B-1C.
TM 55-405-9, Oct All Fixed and Rotor Wing.
TM 55-1510-201-20P-1, Oct U-8.
TM 55-1510-202-20, Oct O-1.
TM 55-1510-203-CL, Aug U-6.
TM 55-1510-203-PMP, Aug U-6.
TM 55-1510-204-CL/3, Aug OV-1.
TM 55-1510-204-CL/4, Aug OV-1.
TM 55-1510-204-CL/5, Aug OV-1.
TM 55-1510-204-10/4, Aug OV-1.
TM 55-1510-204-10/5, Apr OV-1.
TM 55-1510-204-20/1-1, Aug OV-1.
TM 55-1510-204-20-1, Sep OV-1.
TM 55-1510-204-20-2, Sep, OV-1.
TM 55-1510-205-10, Sep U-1A.
TM 55-1510-209-10/1, Oct U-21.
TM 55-1510-209-10/4, Oct U-21.
TM 55-1520-209-CL, Aug CH-47.
TM 55-1520-209-20PMD, Aug CH-47.
TM 55-1520-209-20PMI, Aug CH-47.
TM 55-1520-209-20PMP, Aug CH-47.
TM 55-1520-209-20-1, Sep CH-47.
TM 55-1520-209-20P-1, Oct CH-47.
TM 55-1520-214-20, Oct OH-6.
TM 55-1520-217-CL/1, Jun CH-54.
TM 55-1520-217-10/2, Sep CH-54.
TM 55-1520-224-PMP, Aug OH-13.
TM 55-1520-225-PMP, Aug OH-13.
TM 55-1520-226-PMP, Aug OH-13.
TM 55-1520-226-10, Oct OH-13.
TM 55-1520-227-20PMD, Jul CH-47.
TM 55-1520-227-20PMI, Jul CH-47.
TM 55-1520-227-10, Sep CH-47.
TM 55-1520-227-10, Oct CH-47.
TM 55-1520-227-20-1, Oct CH-47.
TM 55-1520-228-20P, Sep OH-58.

MODIFICATION WORK ORDERS

9-1005-298-20/2, Oct Arm Subsystem, Helicopter, 7.62-MM Mach Gun: High Rate, XM27E1.
9-6920-428-30/1, Oct Redeye.
11-6625-644-40/1, Oct CH-47A.
55-1500-210-30/3, Oct CH-47.
55-1500-210-30/21, Sep CH-47 Instal of Imp Extensible Link Feedback Transducer.
55-1500-210-30/28, Oct CH-47.
55-1500-210-30/33, Oct CH-47 Instal of Check Valves to Upper Boost Actuator Seal Drain Lines.
55-1500-210-40/2, Aug CH-47 Reinforce Aft Pylon Forward Crown Fairing.
55-1510-204-30/15, Oct OV-1.
55-1510-209-30/15, Aug U-21A Instal of Electrothermal Windshield.
55-1510-209-40/3, Sep U-21 Instal of Emergency Exit Hatch.
55-1520-210-30/5, Oct UH-1D.

MISCELLANEOUS

LO 5-3810-202-12-1, Aug 20-Ton Crane-Shovel.
LO 5-3810-202-12-2, Aug 20-Ton Crane-Shovel.
LO 5-3810-203-12-1, -12-3 & -12-4, Aug 20-Ton Truck Mtd Crane-Shovels.
TB 9-1425-429,25, Aug Redeye.
TB 55-1500-210-20/16, Oct CH-47.
TB 55-1510-209-30/5, Sep U-21 Insp of Landing Gear Lower Torque Knee Assys.
TB 55-1520-214-20/38, Sep OH-6 Insp of Over Running Clutch & (369A5350-601)
TB 55-1520-227-20/10, Oct CH-47 One-Time Insp of Pressure Transducers.
TC 1-34, Sep All Fixed and Rotor Wing.

Be sure to notify the AG publications centers in St. Louis and Baltimore of your new address when your outfit moves. Fire off a letter, giving 'em your pinpoint account number and both the old and new addresses of your unit. Also tell 'em the latest date you can receive pubs at your old address. That way, pinpoint will keep the pubs rolling to you.

1971 CONNIE'S CALENDAR
COLD WEATHER NEEDS SPECIAL PM
JANUARY 71
S M T W T F S
1 2
1 2
3 4 5 6 7 8 9
3 4 5 6 7 8 9
10 11 12 13 14 15 16
10 11 12 13 14 15 16
17 18 19 20 21 22 23
17 18 19 20 21 22 23
24 25 26 27 28 29 30
24 25 26 27 28 29 30
31
31
FEBRUARY 71
S M T W T F S
1 2 3 4 5 6
32 33 34 35 36 37
7 8 9 10 11 12 13
38 39 40 41 42 43 44
14 15 16 17 18 19 20
45 46 47 48 49 50 51
21 22 23 24 25 26 27
52 53 54 55 56 57 58
28
59
M16A1 RIFLEMEN: GET DA PAM 750-30
USE THE LO... BE SURE
HOW MUCH OR WHAT KIND OF
BEFORE, DURING AND AFTER OPERATIONS PM-DEPENDS ON TERRAIN AND WEATHER

PM'S A DO IT YOURSELF JOB

MARCH 71						
S	M	T	W	T	F	S
	1	2	3	4	5	6
	60	61	62	63	64	65
7	8	9	10	11	12	13
66	67	68	69	70	71	72
14	15	16	17	18	19	20
73	74	75	76	77	78	79
21	22	23	24	25	26	27
80	81	82	83	84	85	86
28	29	30	31			
87	88	89	90			

BE HONEST ON ESC ...IT'S FOR REAL

APRIL 71						
S	M	T	W	T	F	S
				1	2	3
				91	92	93
4	5	6	7	8	9	10
94	95	96	97	98	99	100
11	12	13	14	15	16	17
101	102	103	104	105	106	107
18	19	20	21	22	23	24
108	109	110	111	112	113	114
25	26	27	28	29	30	
115	116	117	118	119	120	

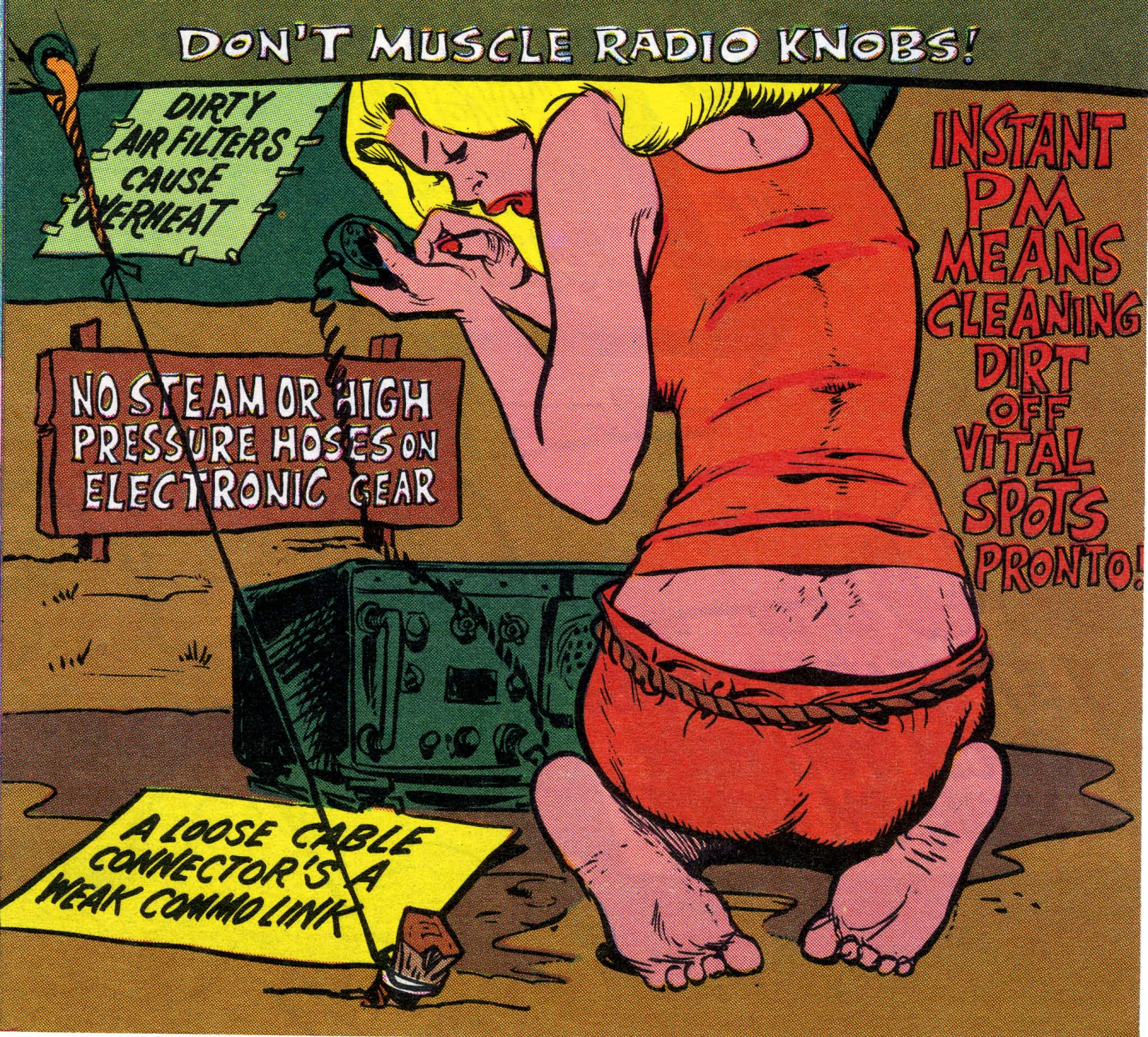
GENERATORS NEED PLENTY OF COOLING AIR

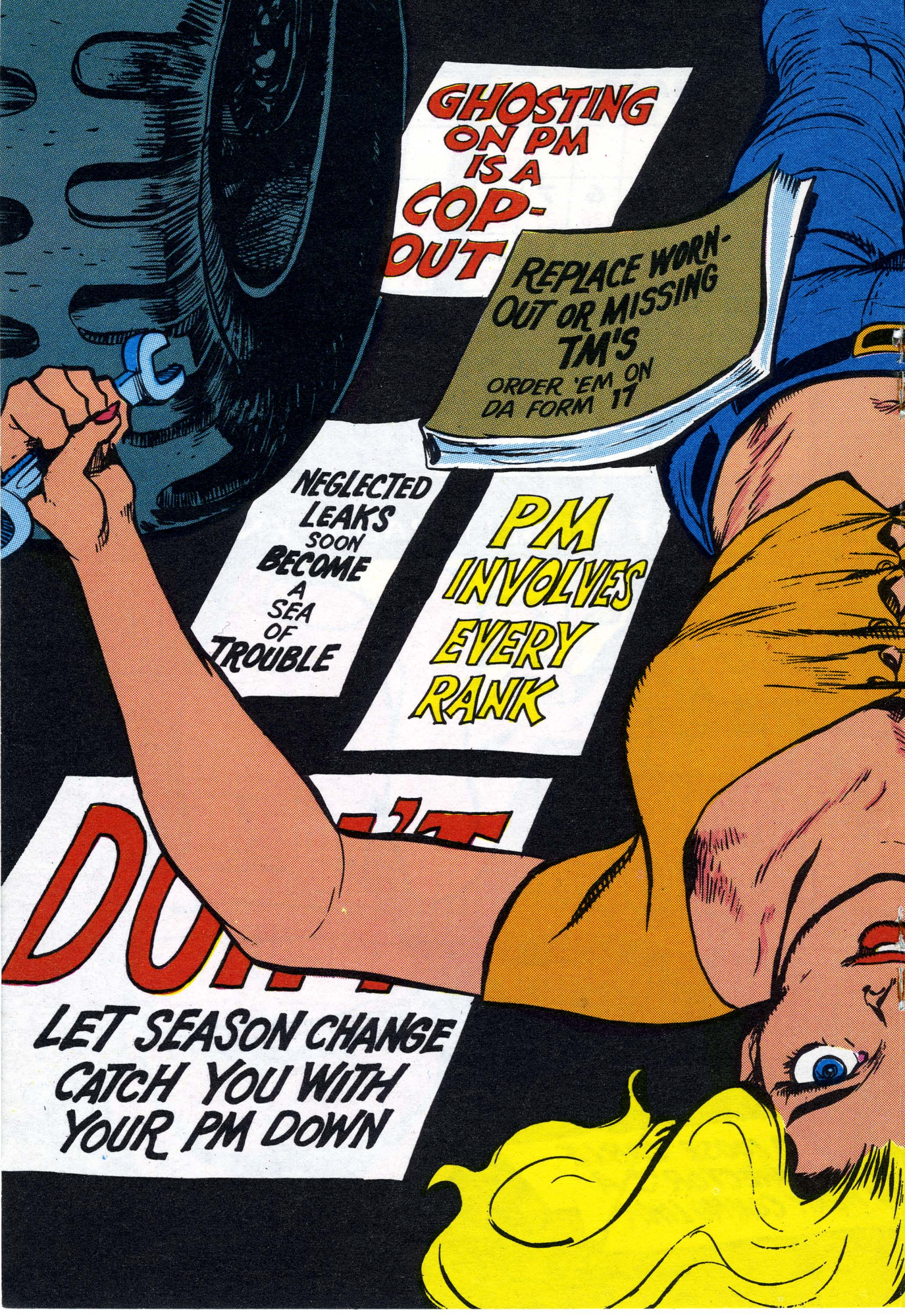
MAY 71

S	M	T	W	T	F	S
						1 121
2 122	3 123	4 124	5 125	6 126	7 127	8 128
9 129	10 130	11 131	12 132	13 133	14 134	15 135
16 136	17 137	18 138	19 139	20 140	21 141	22 142
23 143	24 144	25 145	26 146	27 147	28 148	29 149
30 150	31 151					

JUNE 71

S	M	T	W	T	F	S
		1 152	2 153	3 154	4 155	5 156
6 157	7 158	8 159	9 160	10 161	11 162	12 163
13 164	14 165	15 166	16 167	17 168	18 169	19 170
20 171	21 172	22 173	23 174	24 175	25 176	26 177
27 178	28 179	29 180	30 181			




GHOSTING ON PM IS A COP-OUT
REPLACE WORN-OUT OR MISSING TM'S
ORDER 'EM ON DA FORM 17
NEGLECTED LEAKS SOON BECOME A SEA OF TROUBLE
PM INVOLVES EVERY RANK
LET SEASON CHANGE CATCH YOU WITH YOUR PM DOWN

GHOSTING ON PM IS A COP-OUT
REPLACE WORN-OUT OR MISSING TM'S ORDER 'EM ON DA FORM 17
EQUIPMENT COOLING SYSTEMS NEED RUST INHIBITOR
DUST IS YOUR ENEMY
KEEP FILTERS CLEAN AND WORKING
NEGLECTED LEAKS SOON BECOME A SEA OF TROUBLE
PM INVOLVES EVERY RANK
REPEAL MURPHY'S LAW ANTICIPATE...
MOISTURE
ROTS!!
LET SEASON CHANGE CATCH YOU WITH YOUR PM DOWN
USE THE RIGHT TOOL FOR THE JOB
AVOID FOD FOREIGN OBJECT DAMAGE
DIRTY FUEL RUINS ENGINES

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ROTS!!
USE THE RIGHT TOOL FOR THE JOB
AVOID FOD FOREIGN OBJECT DAMAGE
DIRTY FUEL RUINS ENGINES

LSA IS THE ONLY LUBE FOR YOUR M16A1 RIFLE
GAGES WARN YOU ABOOT TROUBLE
READ 'EM OFTEN
JULY 71
S M T W T F S
1 2 3
182 183 184
4 5 6 7 8 9 10
185 186 187 188 189 190 191
11 12 13 14 15 16 17
192 193 194 195 196 197 198
18 19 20 21 22 23 24
199 200 201 202 203 204 205
25 26 27 28 29 30 31
206 207 208 209 210 211 212
OPERATING TRACTORS OR DOZERS AT NEAR STALLS KILLS THEIR ENGINES
SEEP IS A LEAK IF:- 20% LUBE IS LOST TWEEN SERVICES
TM
AUGUST 71
S M T W T F S
1 2 3 4 5 6 7
213 214 215 216 217 218 219
8 9 10 11 12 13 14
220 221 222 223 224 225 226
15 16 17 18 19 20 21
227 228 229 230 231 232 233
22 23 24 25 26 27 28
234 235 236 237 238 239 240
29 30 31
241 242 243
SWING AND DO YOUR PM THING

SEPTEMBER 71
S M T W T F S
1 2 3 4
244 245 246 247
5 6 7 8 9 10 11
248 249 250 251 252 253 254
12 13 14 15 16 17 18
255 256 257 258 259 260 261
19 20 21 22 23 24 25
262 263 264 265 266 267 268
26 27 28 29 30
269 270 271 272 273
OCTOBER 71
S M T W T F S
1 2
274 275
3 4 5 6 7 8 9
276 277 278 279 280 281 282
10 11 12 13 14 15 16
283 284 285 286 287 288 289
17 18 19 20 21 22 23
290 291 292 293 294 295 296
24 25 26 27 28 29 30
297 298 299 300 301 302 303
31
304
READ YOUR FIR DIGEST
PM IS PEACE OF MIND
PM IS LOVE
NEGLECT BEGETS A BAD TRIP
MULTI-FUEL TRUCKERS--: GET DA PAM 750-11
SEE TB 750-651
FOR
ENGINE COOLING
SYSTEM PM
WHY PAY TWICE? USE THAT WARRANTY
DIRT-CLOGGED BREATHERS BLOW SEALS
UPDATE YOUR ROUNDS-FIRED DATA
ON FORM 2408-4
TIME TO GET READY FOR SEASONAL CHANGEOVER
43

PM IS BEAUTIFUL

NOVEMBER 71

S	M	T	W	T	F	S
	1 305	2 306	3 307	4 308	5 309	6 310
7 311	8 312	9 313	10 314	11 315	12 316	13 317
14 318	15 319	16 320	17 321	18 322	19 323	20 324
21 325	22 326	23 327	24 328	25 329	26 330	27 331
28 332	29 333	30 334				

DECEMBER 71

S	M	T	W	T	F	S
			1 335	2 336	3 337	4 338
5 339	6 340	7 341	8 342	9 343	10 344	11 345
12 346	13 347	14 348	15 349	16 350	17 351	18 352
19 353	20 354	21 355	22 356	23 357	24 358	25 359
26 360	27 361	28 362	29 663	30 364	31 365	

SUPPLY TYPES: YOU NEED SB 700 -50

PM IS LIKE BREATHING ... HUFF SAID

KEEP SUPPLIES PACKAGED TILL READY FOR USE

BEAUTIFUL PM IS MORE THAN SPIT 'N' POLISH

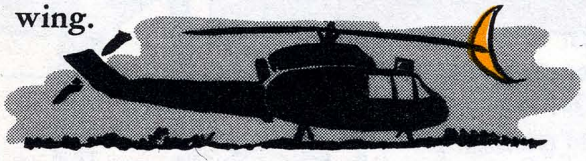
A SWITCH IN TIME

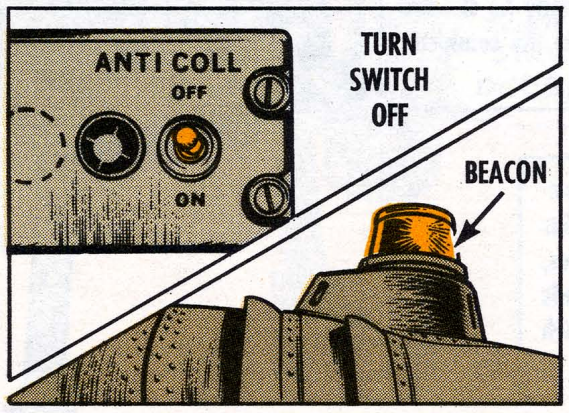
If you're a gung-ho pilot-type communicator, and you're following the good word . . . well, good.

If you haven't heard the good word before, well, then . . .

Get those memory cells to nudge you into snapping off your aircraft radio sets (or other electronic equipment) before you cut the engine. Then you'll not be so likely to start the engine with the electronic items on.

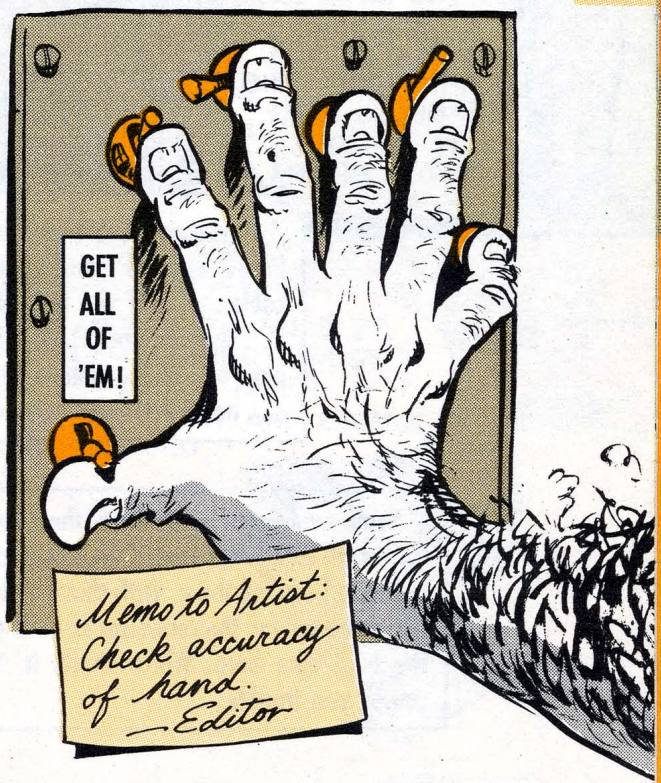
This means you separately turn off any radio sets or related electronics equipment that happens to be on as you prepare to vacate your chopper or fixed-wing.

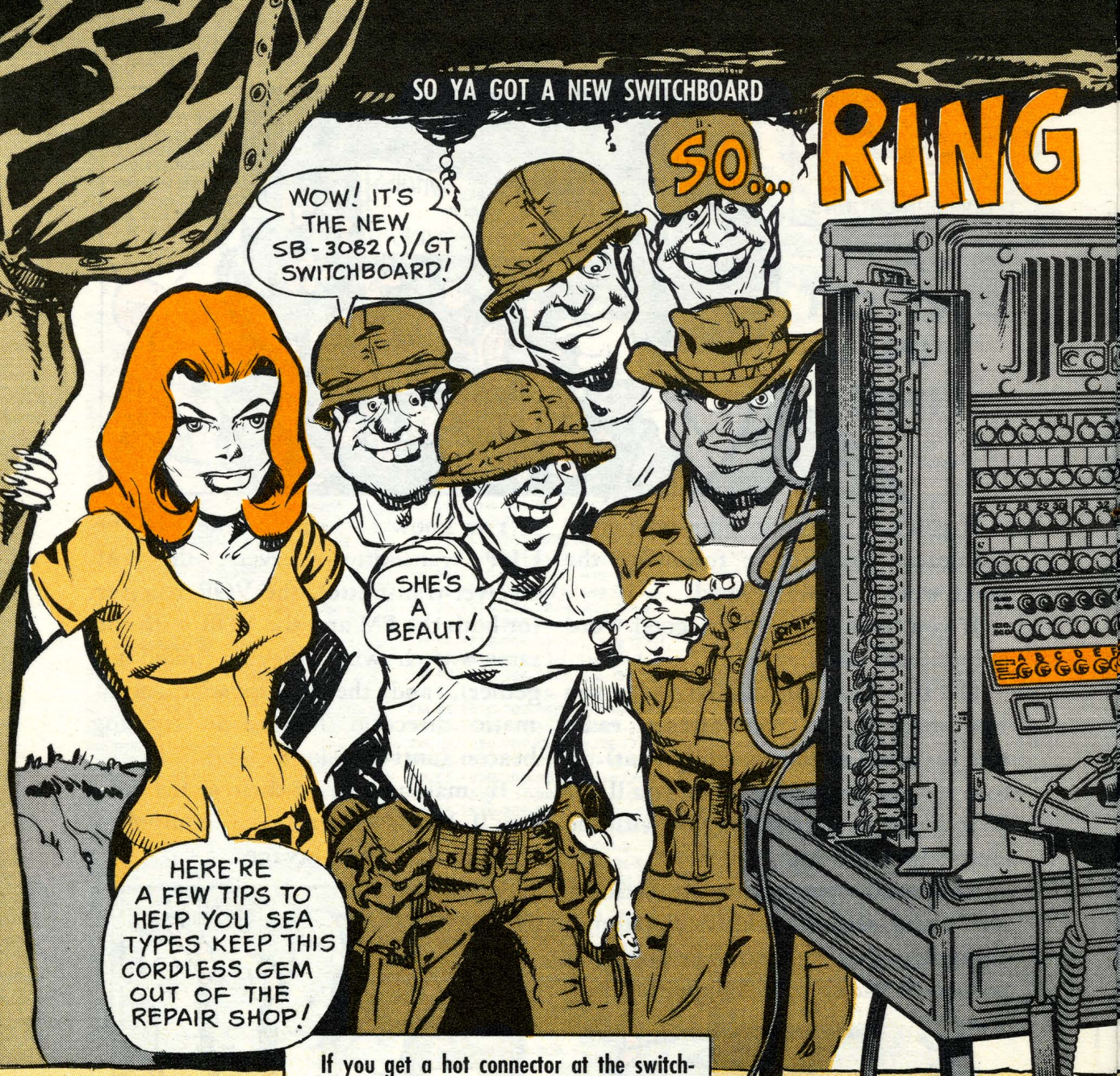




You know . . . such as the VHF or UHF transmitter-receivers, the FM receiver-transmitter, the VOR receiver (or both the FM and the VOR with the same switch when they're linked together), and the transponder, automatic direction finder, or rotating beacon (anti-collision).

By making sure of these switch-offs, you'll be protecting your equipment from power-surge ravages.

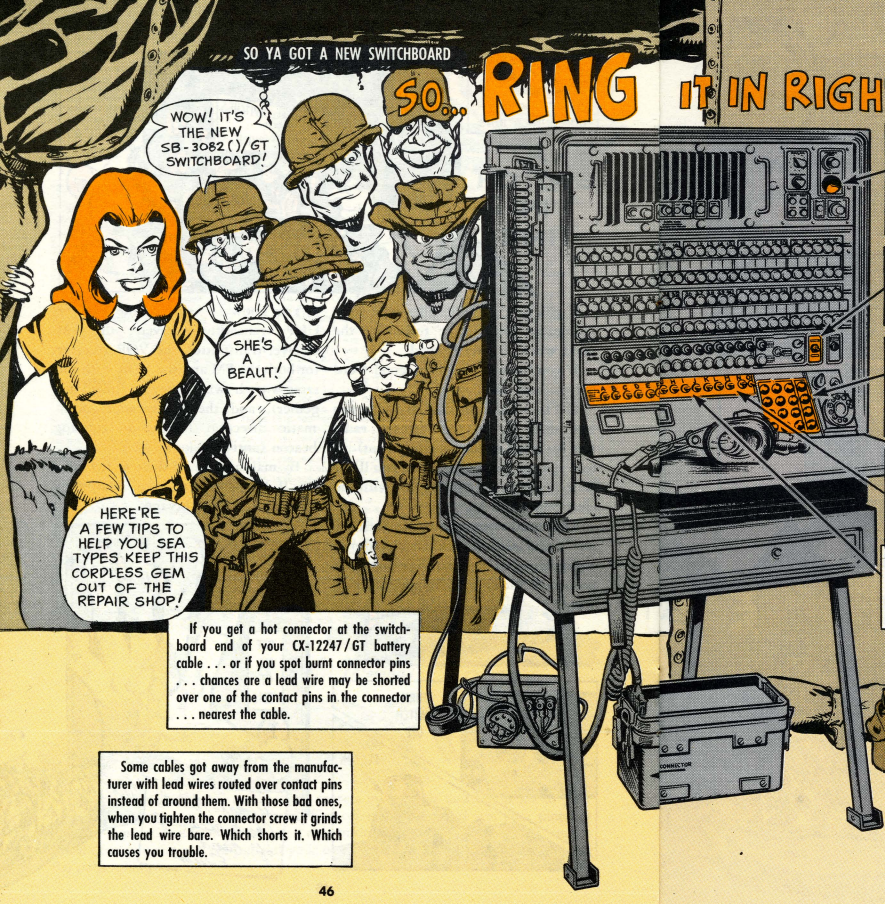


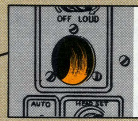


If you get a hot connector at the switchboard end of your CX-12247/GT battery cable . . . or if you spot burnt connector pins . . . chances are a lead wire may be shorted over one of the contact pins in the connector . . . nearest the cable.

Some cables got away from the manufacturer with lead wires routed over contact pins instead of around them. With those bad ones, when you tighten the connector screw it grinds the lead wire bare. Which shorts it. Which causes you trouble.

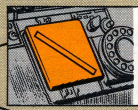
SO... RING IT IN RIGHT!



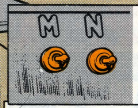


The transducer cavity at the upper right of the board is not a storage bin. Repeat: **not!** If you stash pencils, pens or anything else in there with an edge sharp enough to puncture the base of the cavity, you put the board down.

Put the PRE-EMPT switch in OFF position as soon as you finish with it. If you leave the switch engaged, you get so much noise that it's hard to talk.



Kill the urge to play tunes with the KEY SENDER buttons. Otherwise, you can damage the keys. Use 'em only when you have to . . . and keep the keyboard cover on when you're not using 'em. That'll forestall temptation.



Those lettered CONNECT-TALK-NORMAL switches are rugged enough to do their job well and for a long time, but . . . Deliberate abuse or too much muscle can put 'em down. Slight pressure's all you need to do the job.

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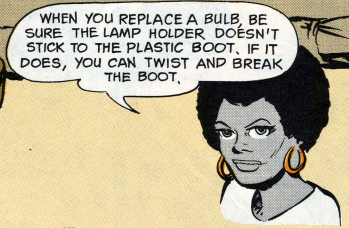
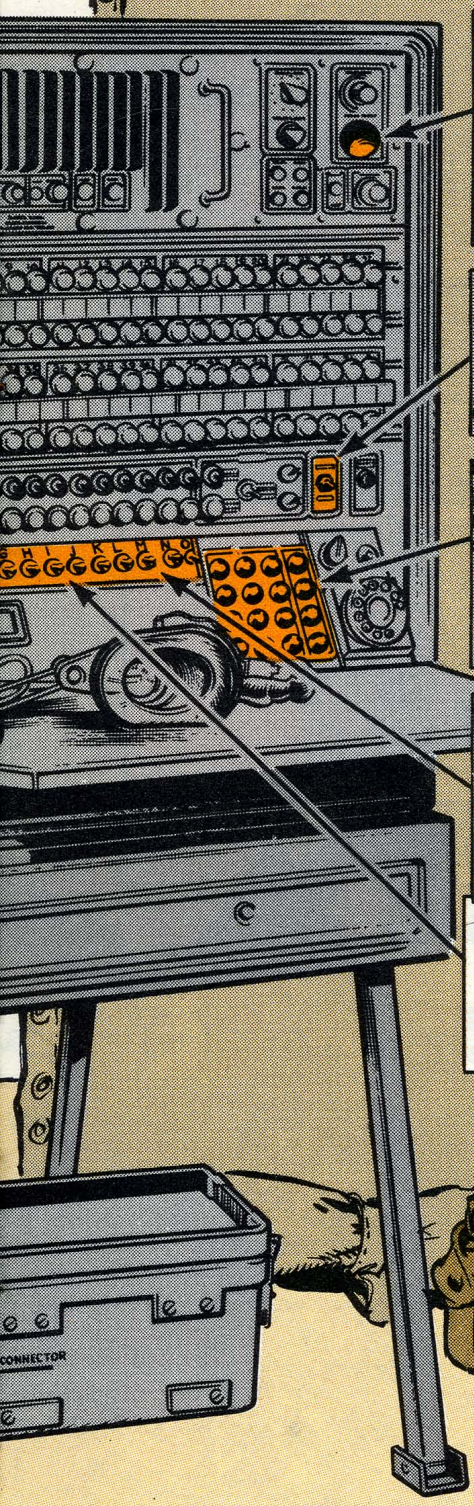
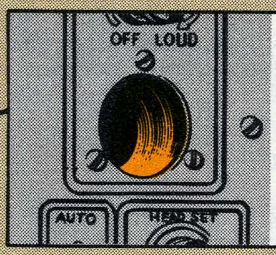


IT IN RIGHT!





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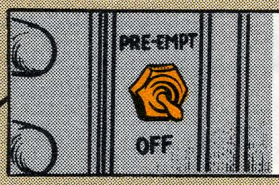

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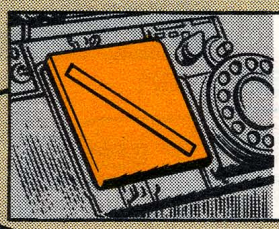

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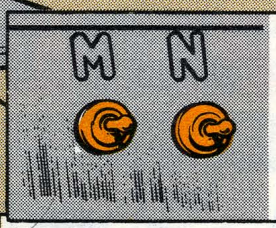

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P.S MORE

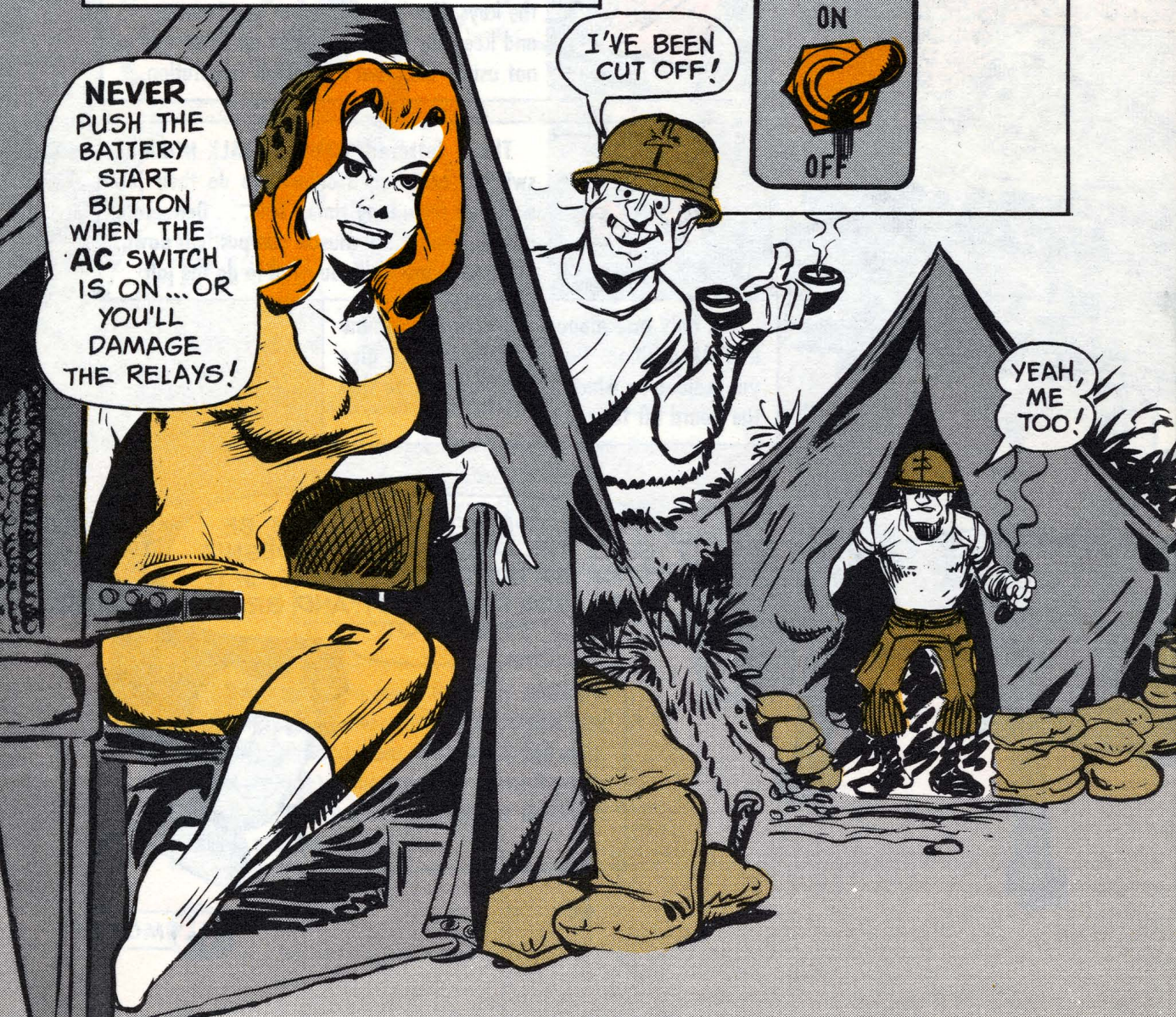
If you get a fail indication in the "panic button" panel (4 red FAIL buttons), take a deep breath and a quick memory refresher before you panic.

Chances are you depressed a connect button with no line connected to it. If the line is tied in to the button you pushed, then go to the TM troubleshooting chart to find out what the problem is.

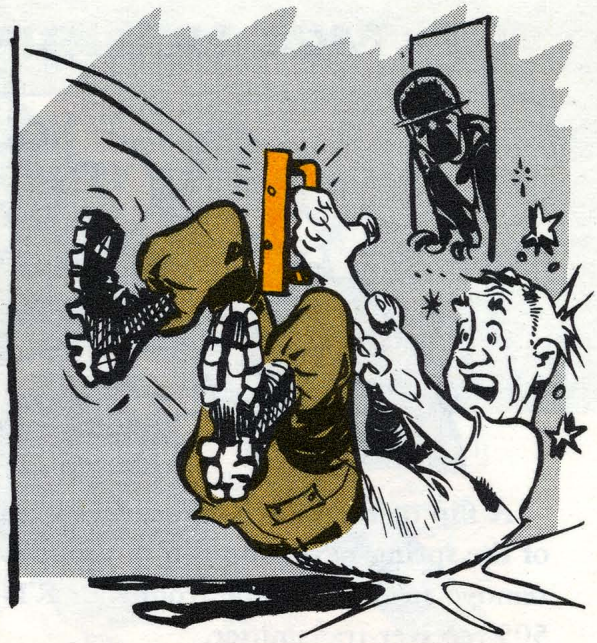
If there's no line tied in to the button you pushed, pop the button to disconnect . . . and the FAIL light should go out.

Another "no panic" exercise:

If you suddenly lose all calls on the board, chances are you pushed the DC switch off. Flip the switch back on. You won't get your calls back, but you won't have to call a repairman, either.



Those PCM panel puller screws are brass . . . which means they can't take much abuse without breaking. So, pull the panels with steady, even pressure. Jerk 'em and you're a jerk.



PUBLICATIONS

Basic pubs you must have for the board and the TTC-35 include:

TM 11-5805-471-12 (May 70) SB-3082( )/GT
IM 11-5805-603-15 (May 70) AN/TTC-35 ( )
TM 11-6140-208-15 (Apr 67) BB-451/U
TM 5-4120-273-15 (Feb 69) Air Conditioner

CARE FOR CORDS

Attention, man, the theme is power cords.

Whether you use 'em on a TH-5/TG telegraph terminal or an AN/GRC-106 radio set, it's smart to inspect 'em at regular intervals for preventive-maintenance possibilities.

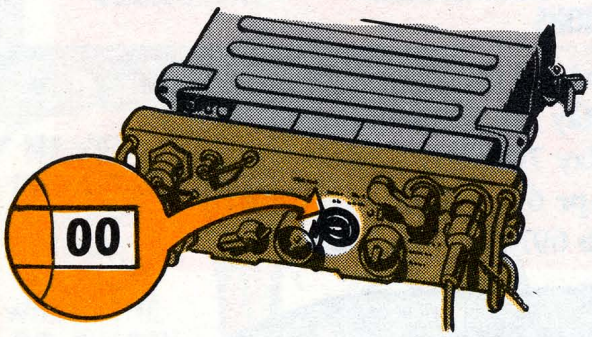
Then you can use a damp cloth to knock out any beginning dry-rot, and follow up with a dry cloth to remove the moisture.

If these cords (and that means on all equipment) aren't checked, dry-rot can slip your equipment a case of the shuddering shorts.

This spells downtime that could be avoided with PM checks of the power cord for such ailments as fungus and breaks.

MODULE SPRING SAVER

A flip of the switch can save a snap of the spring next time you're about to remove an A10 module from your RT-505 receiver-transmitter.



By setting the KC tuning switch to "00" you allow the bushing spring to clear the A10 module case when you remove the module . . . thereby preventing a snapped spring.

Before you replace the A10, set the KC switch to "50", which clears the way for installation.

Insurance: be sure the module's snug in its socket before you turn the KC or MC tuning switches. Saves the spring.

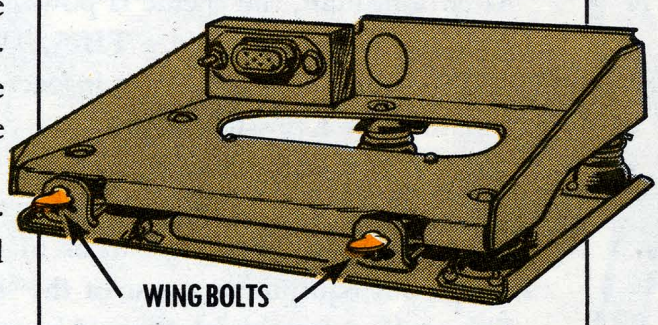
HELPFUL HARDWARE

Lacking some nuts and screws for the MT-1029/VRC and MT-1898/VRC mounts in the AN/VRC-12 radio series?

You don't latch onto these mini-size babies with FSN's. They're not in supply. What you do is hit the trouble scene with common hardware to fill the gap.

If you can't make it with the hardware available to you, then you'll need to get a hand from your support.

That way, you oughta be able to replace lost wingbolts, shock isolator screws and the like without any hard times.



These small-size hardware items originally come with the mounts, on a one-time issue basis.

INSTALLATION CONSTERNATION

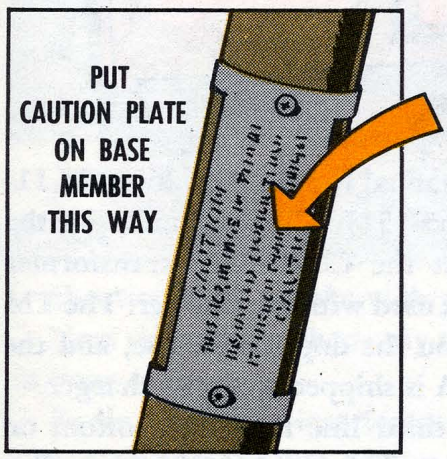
Dear Half-Mast,

Why is my unit getting bad bends and breaks in the top of the AB-35 mast section installation on the RC-292 antenna equipment? These bends and breaks occur at the section CAUTION plate. Any clues?

SP4 R. A.

Dear Specialist R.A.,

The trouble's in the placement of the CAUTION plate rivet holes. Go by SB 11-614 (Jun 67), where it says to attach the plate to the base member of antenna bases, towers, and other structures. Make sure the plate is visible from the ground.

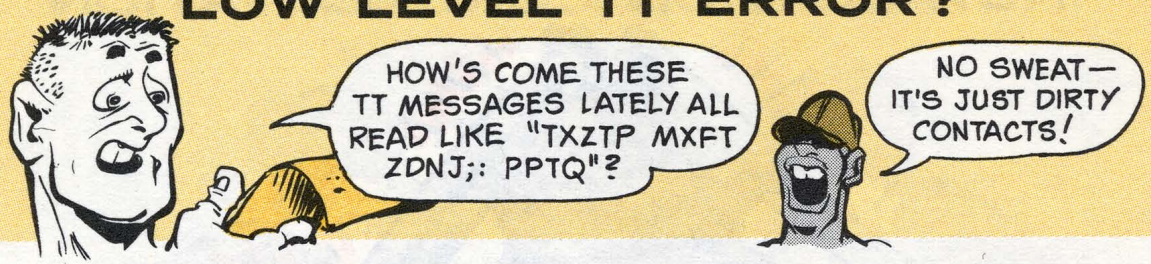


Horizontally-alined rivet or screw holes near the top of an AB-35 mast section can weaken the section and cause a bend or break when the RC-292 antenna equipment is hoisted by the guy ropes.

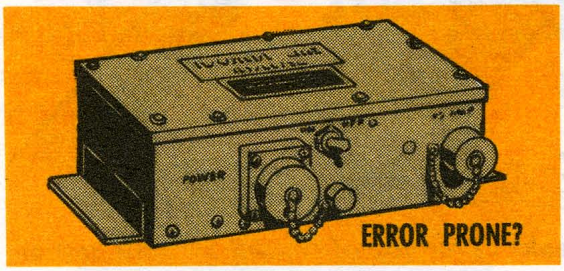
But with the right kind of installation, you'll get the benefit of the CAUTION reminder and your antenna components won't be weakened.

Half-Mast

LOW LEVEL TT ERROR?



You say you've got a TT-523/GGC or TT-524/FGC low level signaling device tied into your teletypewriter set and your local copy off-line error rate is zooming?

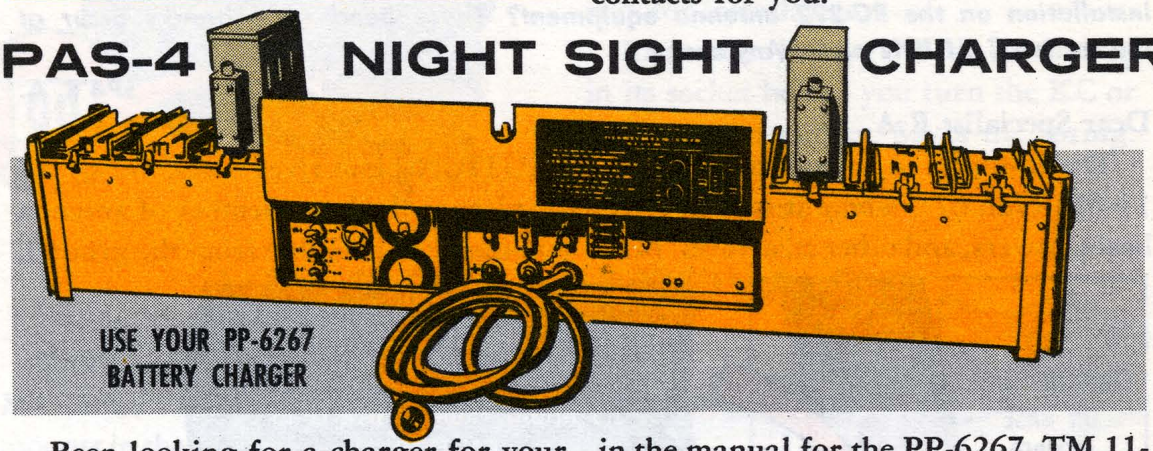


Unlax. Your problem almost certainly is with dirty and/or out of adjustment send contacts on your teletypewriter.

It's a common problem (high error rate-dirty contacts) when you tie in the TT-523 and -524, because the low keying voltage and current levels aren't up there enough to help the send contacts with their self-cleaning function.

So have Support check out the send contacts for you.

PAS-4 NIGHT SIGHT CHARGER



Been looking for a charger for your 6-volt BB-429/U battery?

You just found it.

Its name is Charger, Battery, PP-6267/U, FSN 6130-179-8333. And stick with that FSN, because it's for a modified charging rack that also goes out (unmodified) under another brand name.

The charger is guaranteed to insure you plenty of power for your AN/PAS-4 night vision sight.

There are certain cautions spelled out in the manual for the PP-6267, TM 11-6130-265-15 (Jun 70) but underline the one that the CN-16A/U transformer must be used with the charger. The TM gives you the dope on its use, and the CN-16A is shipped with the charger.

The third line from the bottom on page D-9, TM 11-6140-203-15-3 (Dec 69) (on the BB-429), gives you your authority for requesting the PP-6267. However, don't use the FSN listed on page D-9. It's no, longer valid. Use FSN 6130-179-8333.

Q-4A SCANNER OIL CHECK

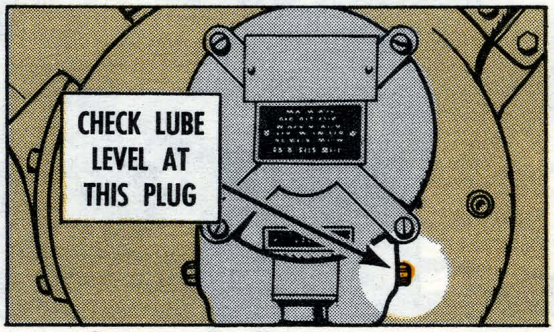
Wouldja' believe that some troops are putting down their AN/MPQ-4A radar sets by using the wrong lube, or forgetting to check the lube level in the scanner gear motor?

T'sa fact. Without the right lube, or the right amount, the motor fails.

So, remember, after each 1000 hours operation the oil is changed with lubricating oil, gear, FSN 9150-823-8068 (1 pint). Also, the level should be checked weekly. Bring it up to the bottom lip of the front plug when necessary.

If you've gotta add a lot of oil between changes, you've got a defective seal. Get it replaced.

Thé story on scanner gear motor lubing is in C5 to TM 11-5840-208-20.



Q-4 INTERFERENCE

Shooting CRT blanks with your AN/MPQ-4A radar set?

Next time your cathode ray tube comes up blank, consider this before you call in your support:

Radio frequency interference (RFI) from nearby commo equipment may be wiping out your CRT picture.

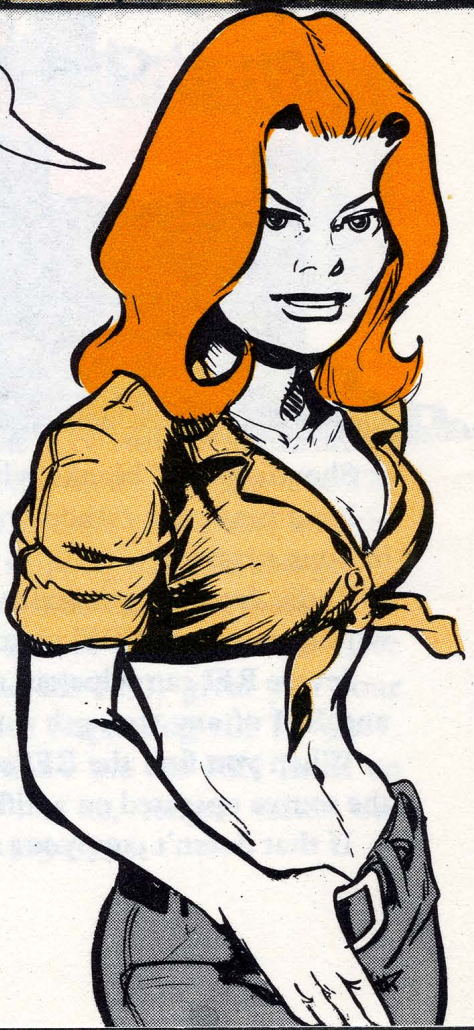
Severe RFI can wipe out any kind of target (although raster lines will show), and RFI of any strength can cover up weak targets.

When you find the RFI source (maybe in a nearby commo bunker), try to get the source operated on a different frequency . . . or moved . . . or move the Q-4A.

If that doesn't cure your troubles, call support.

WITH M139 AUTOMATIC GUN . . .

YOUR SPIT



Yep! They took the M114A1 command and recon carrier, fitted it with an XM27 cupola and an M139 20-MM automatic gun and turned it into the M114A1E1 — spit firing — giant killer.

The M139 automatic gun throws quarter-pound slugs that can hammer holes through lightly armored vehicles, low-flying aircraft and personnel carriers.

It's a sweet-firing gun, but to get the best out of it you have to know how it works.

The biggest thing to remember about the M139 is lube.

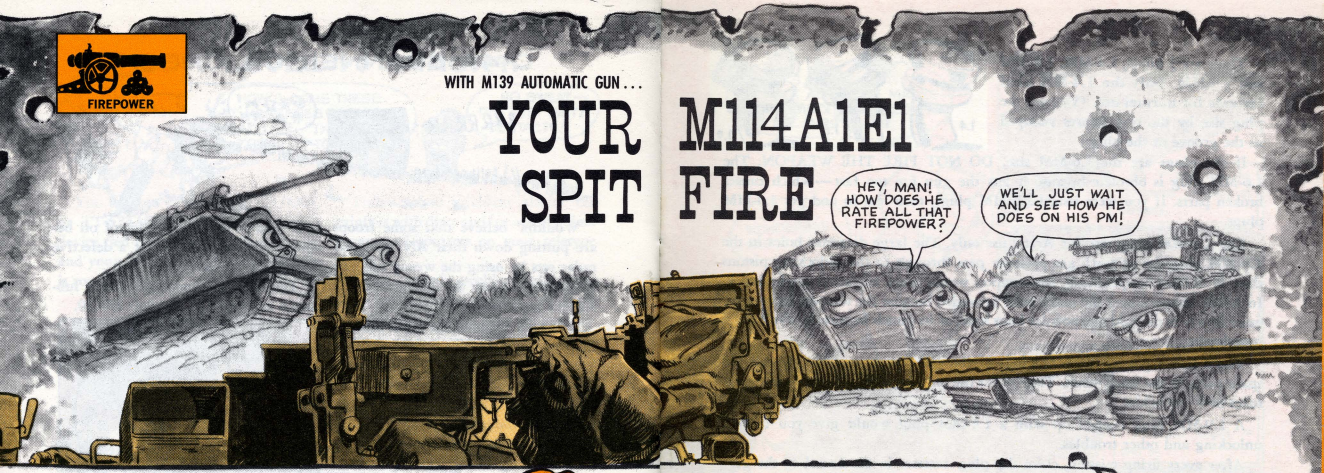
Give this gun giant-size helpings of LSA, and you take care of most of the troubles so they don't even happen.

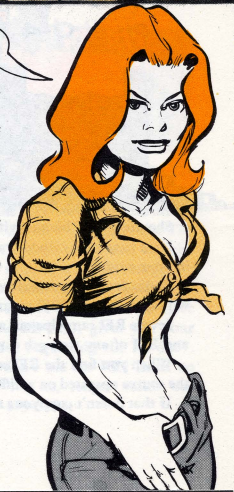
Every time after cleaning put plenty of LSA on the breech bolt, receiver rails and cradle guides before you put the gun together again.

FIREPOWER

WITH M139 AUTOMATIC GUN . . .

YOUR M114A1E1 SPIT FIRE





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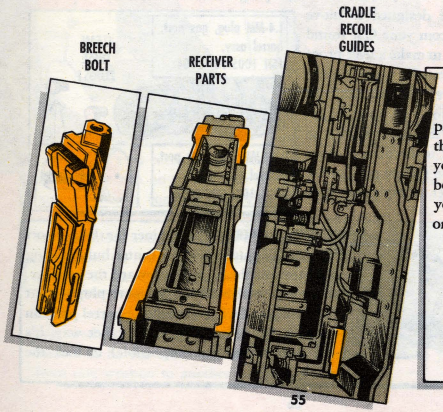
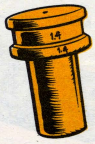


GAS-PORT PLUGS

The gas-port plugs are the first thing to check when you get a new M139 because the life of your gun depends on it.



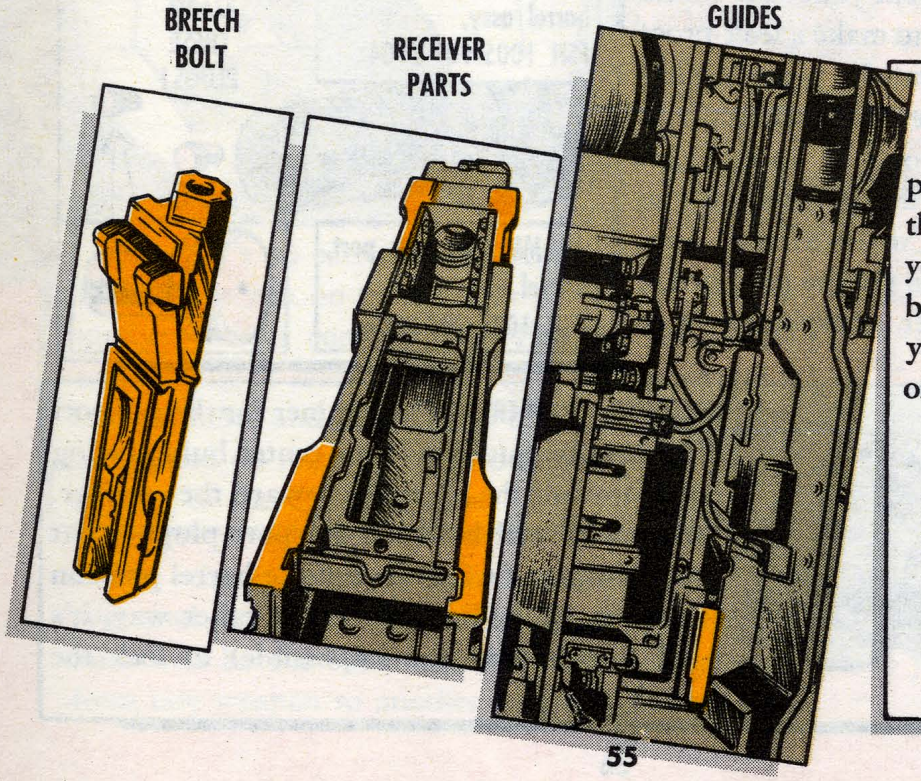
PS MORE

M114A1E1 FIRE

BREECH BOLT

RECEIVER PARTS

CRADLE RECOIL GUIDES



GAS-PORT PLUGS

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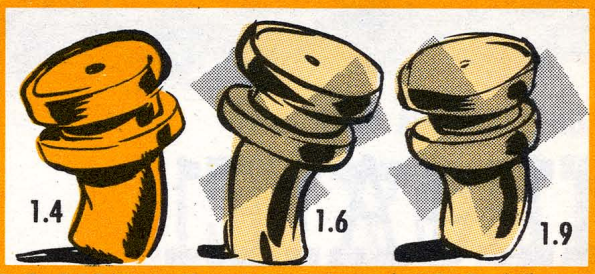
P.S. MORE



There are 3 kinds, 1.4-MM, 1.6-MM and 1.9-MM. **Only the 1.4-MM kind are safe for normal use.** (You tell the plug size by the tiny figures stamped in the groove of the plug.)

If the plugs are the 1.6-MM size, DO NOT FIRE THE WEAPON. The 1.6-MM plug is obsolete because it lets the gun fire too fast—which causes broken parts. If you were issued 1.6-MM plugs, turn 'em in and get 1.4-MM plugs.

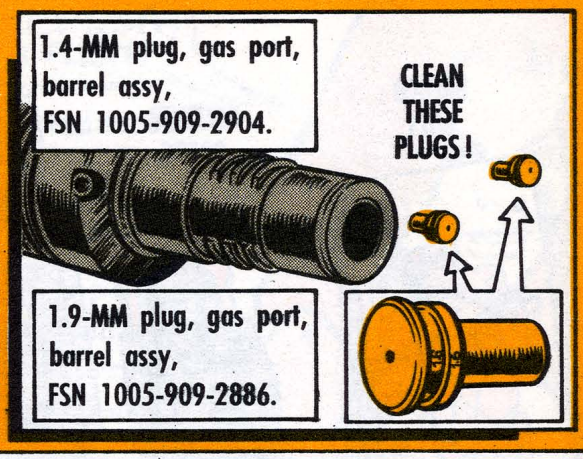
The 1.9-MM plugs are for Arctic use only. The large diameter holes in the 1.9-MM plugs let so much gas pressure pass through to the unlocking pistons that, in normal temperatures, the weapon would work so fast it might break. In Arctic temperatures the extra push is needed because the weapon parts move more slowly in the cold and powder loses some of its punch because it won't burn completely.

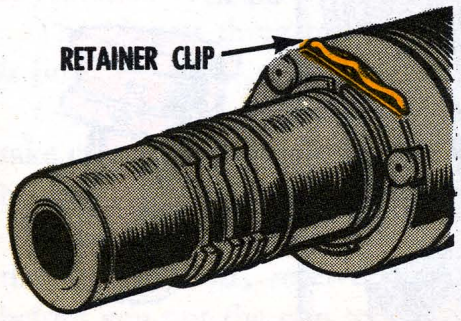
You'll find a pair of 1.9-MM plugs in the spare parts roll but they're **not** spare parts in the usual sense. They're for use only in pairs and only in temperatures of 0° or below.

A 1.9-MM plug teamed up with a 1.4-MM plug would give you uneven unlocking and other troubles.

After every firing mission, clean the plug recesses in the barrel so the gas-port plugs can move freely as far as the gas-plug retainer will allow.

These plugs are designed to move freely so the gas from your first round can drive 'em back to make a leak-proof seal with the gas transfer plugs. Unless the plugs can move, this seal won't be tight and there won't be enough gas pressure to drive the pistons back as hard as they need to be driven. Also, make sure you clean the gas plug orifice (center hole) after completing each mission.





GAS PLUG RETAINER—The retainer for the gas-port plugs can be put in with its center bulge facing either toward the barrel or toward the receiver. Either way will hold the gas-port plugs—but only the bulge-facing-toward-the-barrel position is correct. If the bulge faces the other way, it's hard (sometimes even impossible) to lock the barrel.

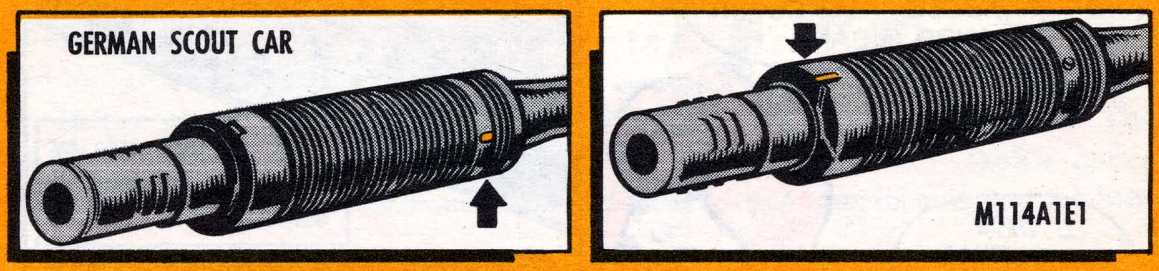
MARK THIS WELL

The FSN's on each major assembly of the M139 should give you no trouble but the other 2 sets of numbers might confuse you. The set nearest the manufacturer's mark (HS or ◈) is the assembly serial number and the receiver assembly serial number is used on records where they ask for the serial number of the entire weapon.

The other number on each assembly is the manufacturer's batch number, and you need pay it no mind. On some M139's the batch numbers of all the assemblies will be the same but there is no requirement that you shift assemblies from one weapon to another to make this happen.

PS MORE

The broad, white, mark on the barrel is used as a reference mark if the gun is mounted in a German Scout Car. When the gun is on the M114A1E1, use only the narrow white mark to line up the barrel.



DOING IT RIGHT

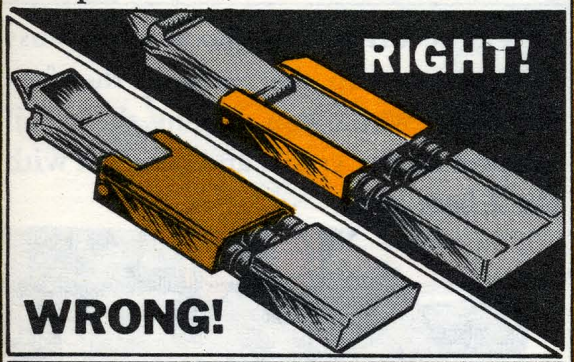
The M139 has more parts than most other weapons, but they fit together in a logical way. However, there're a couple of places you might get mixed up.

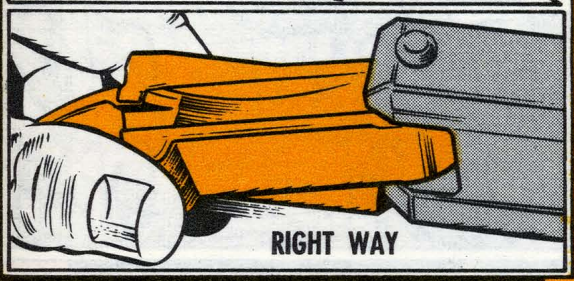
EXTRACTOR GROUP—You could put the extractor spring into the extractor recess flat end first instead of bevelled (rounded) end first, but you couldn't assemble your extractor to the bolt.

COUNTER SLIDES—On both the left and right counter slides you could:

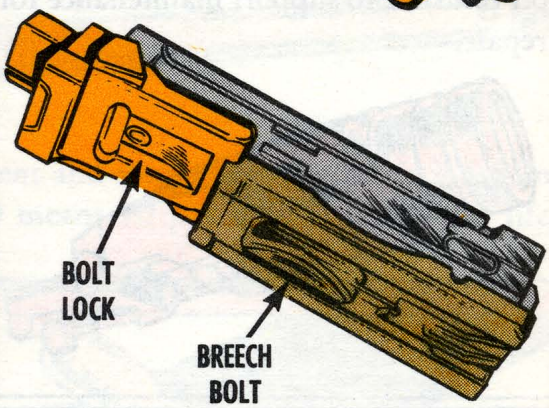
Put the plug in first and then the spring. (The spring would bend and you'd have trouble.)

SEAR BUFFER GROUP—The sear buffer group has to be put together with both sear buffer blocks grooved-side-up. The sear must be positioned so that with the pin through it the head of the sear does not fall below the level of the sear buffer blocks. (NOTE: The receiver and the sear buffer group are upside down for this procedure.)



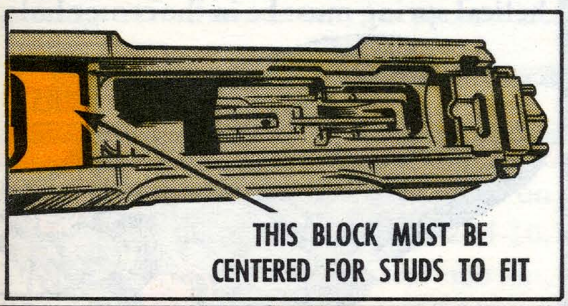


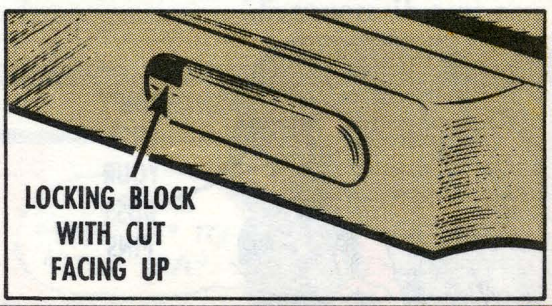
BOLT ASSEMBLY—Both the breech bolt and the bolt lock must be assembled with their chrome-plated surfaces facing down. The parkerized (dark) faces of these parts must face up when they're assembled. If the chrome surface of the bolt lock is facing in the wrong direction, it won't lock when the bolt body is put into the receiver.



LOCKING BLOCK—With the receiver resting in the assembly position (rails down) the locking block can be slipped into the receiver with the cut edge facing either up or down. However, there's only one correct way to do it. Unless the cut is facing UP the bolt assembly won't lock in the fire (battery) position.

Even when you have the locking block in the receiver with the cut (bevelled) edge facing up, the block has to be centered or the retaining plate studs won't fit.

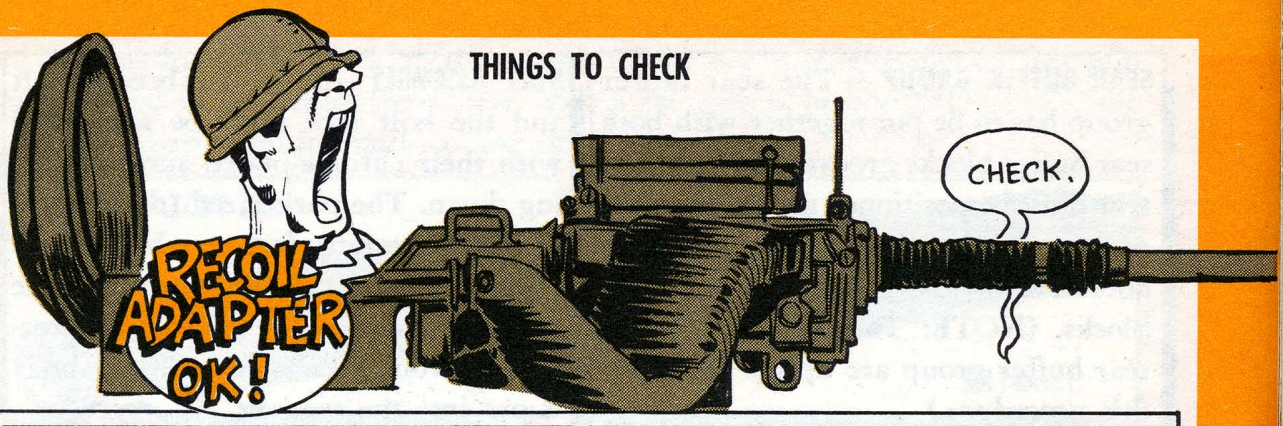




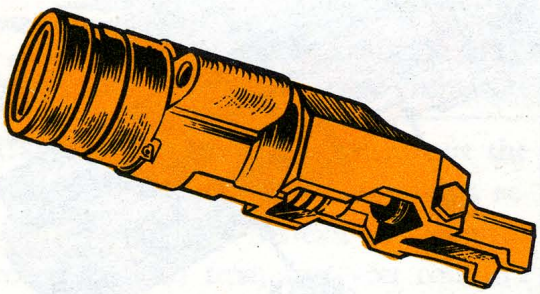
(Note: When the gun is new the locking block will be a tight fit and need not be removed. However, after a few thousand rounds it may become loose, but this is OK and nothing to worry about.)

P.S. MORE

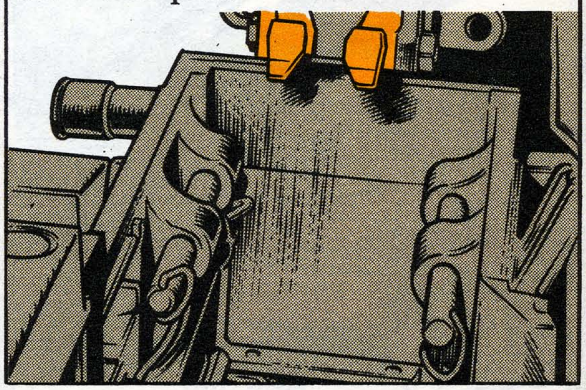
THINGS TO CHECK



RECOIL ADAPTER—Your recoil adapter is filled with hydraulic oil but it should never make you aware of this fact. Check after firing and if it's leaking oil return it to support maintenance for repair.

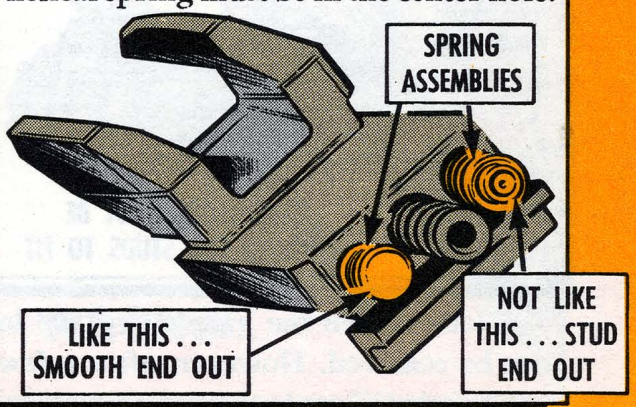


The recoil adapter hook tangs must be positioned in the recess in the feeder slide while you mount the recoil adapter to the cradle and secure it with the 2 boss pins.

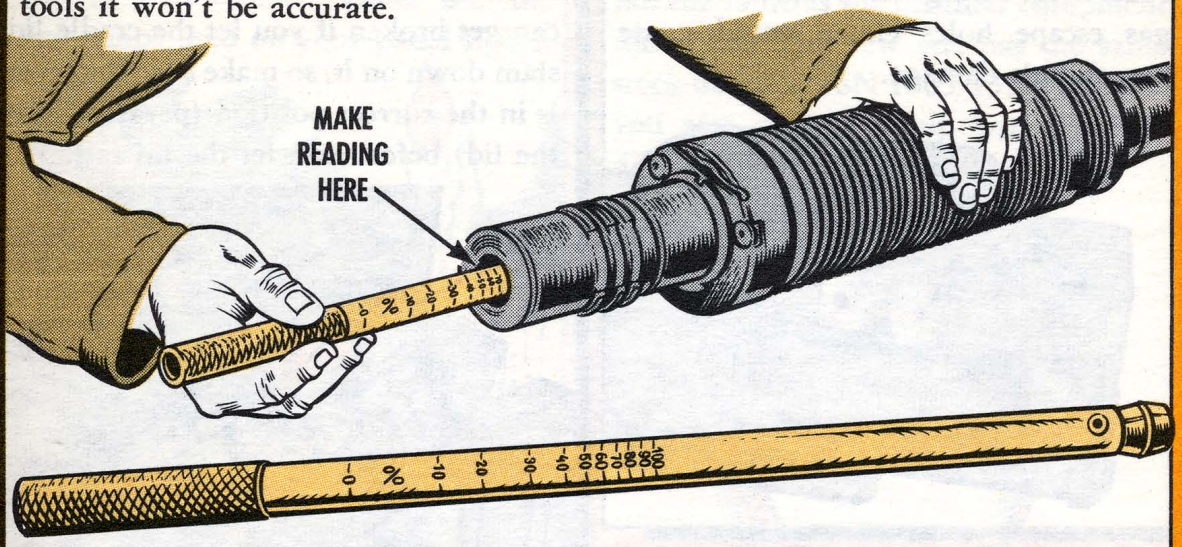


RECOIL ADAPTER PINS—When you take the gun out of the cradle, make sure you put the 2 recoil adapter pins into the bosses inside the cradle. A lotta these pins have been getting lost because they were left on the recoil adapter after the gun was dismounted.

EJECTOR AND SPRINGS—The 2 ejector spring assemblies won't work right unless they're positioned in the holes of the ejector with their smooth ends facing out and their stud ends sticking through the holes provided. The ejector helical spring must be in the center hole.

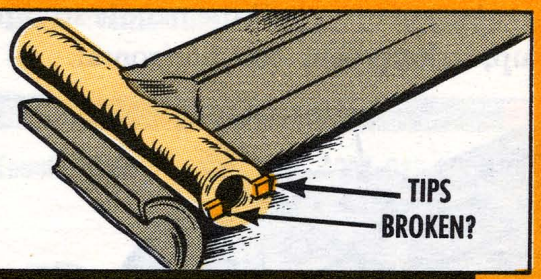


BARREL WEAR GAGE—Keep the plug part of the barrel wear gage wrapped in a soft cloth when not in use. If it gets burred from banging around with the other tools it won't be accurate.



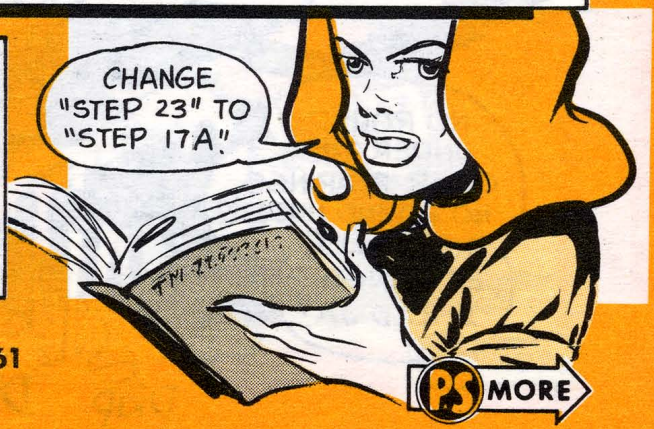
Your barrel wear gage reads in per cent and shows how much life is left in the barrel. F'rinstance, a reading of 70 means 70 per cent of the barrel life remains.

LATCH DEPRESSER—The 2 tips on the latch depresser that you use to unlock the sear lever spring housing can get broken off if used too roughly. If this happens, it's OK to file new notches on the latch depresser.

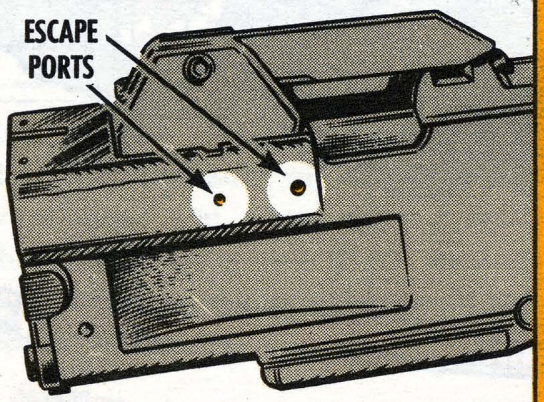


SPRING DISMANTLING TOOL—The threads on the end of the rod are cut according to metric system measurements which means you might have some trouble getting new threads cut. So protect them from getting mashed.

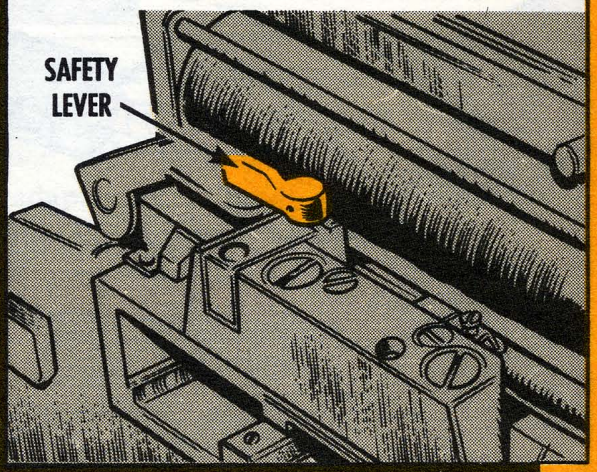
CHANGE STEP—Make a fast change on page 172 of Ch 6 to TM 9-2320-224-10. Where it says in the left-hand margin, "Step 23" make it read "Step 17A" and show that you do it just before Step 18 instead of where it is now.



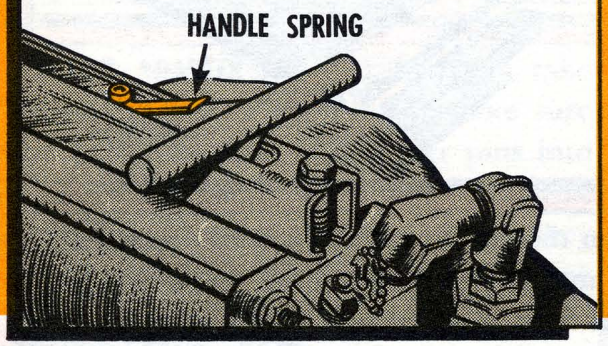
ESCAPE PORTS — When you clean the receiver make sure the gas escape holes are open. Use a toothpick or a sharpened twig. Firing the weapon with the gas escape holes closed could cause breech bolt damage.



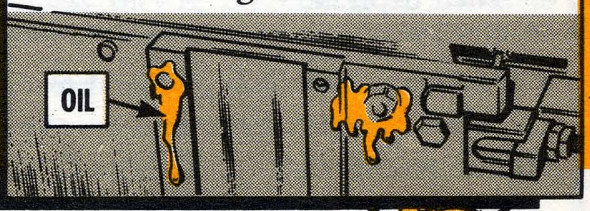
SAFETY LEVER — The full name is "securing link aligner safety latch lever." It keeps the link aligner cover latch from working loose. The safety latch lever can get broken if you let the cradle lid slam down on it, so make sure the lever is in the correct position (parallel with the lid) before you let the lid fall.



HANDLE SPRING — The spring in the ammunition lubricator handle will break real easy if you pull the handle straight up, so keep your pull horizontal.

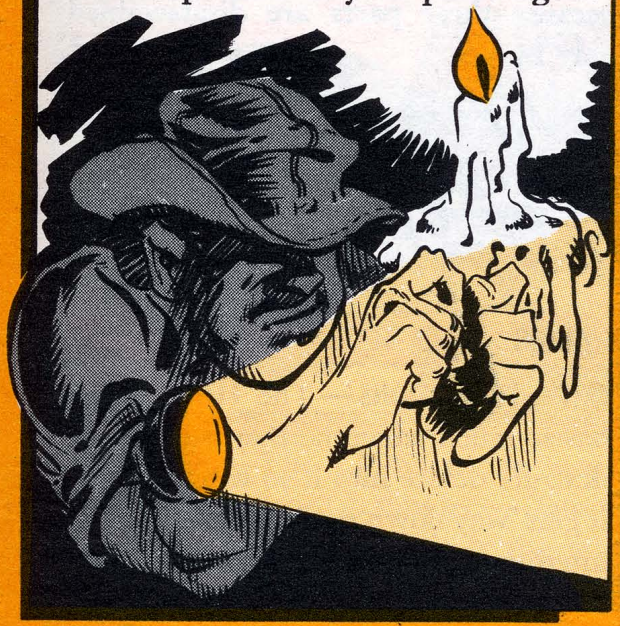


LUBRICATOR — The lubricator holds enough LSA to lube 5,000 rounds but you'll lose it all in a few seconds if a round stops directly under the oiler bearings. So, when loading the weapon make sure you don't have a round under the oiler bearings.



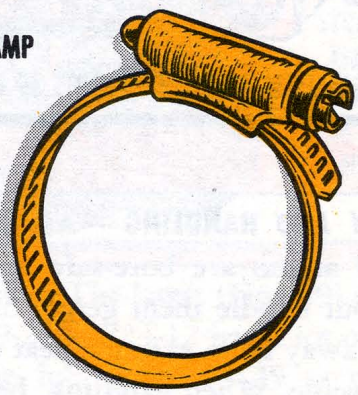
SUPPLY CHANGES

REPLACEMENT LAMPS—For your control box lights, order Lamp, incandescent, FSN 6240-155-7836. These are the same lamps used on your panel lights.



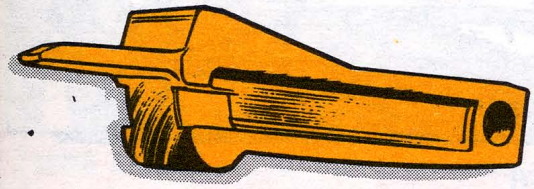
DUST BOOT CHANGE—The replacement dust boot for the elevation cylinder is not the same as the original equipment dust boot. The new one has the same stock number, FSN 1005-131-1904, but you also need a clamp with it, FSN 4730-908-6293.

CLAMP

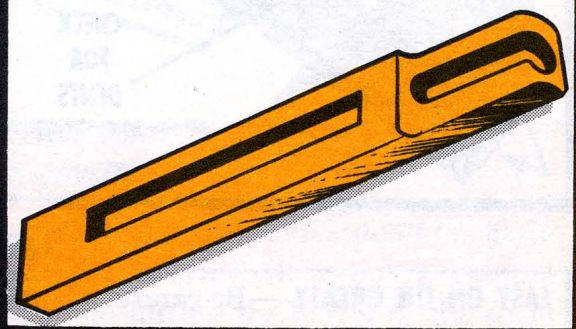


ADD ITEMS—Add these 2 parts to your Basic Issue Items List on page B-10 of Ch 6 to TM 9-2320-224-10:

Sear FSN 1005-943-1771



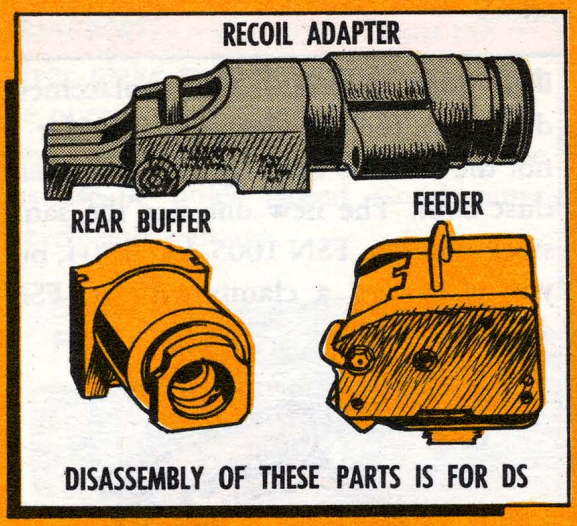
Counter-Slide FSN 1005-943-1807



NO DRY CLEANING

Some things you just don't dryclean, like, f'rinstance, a paper towel. Other things you don't dry clean are: 1. The recoil adapter assembly; 2. Rear buffer assembly; 3. Feeder assembly.

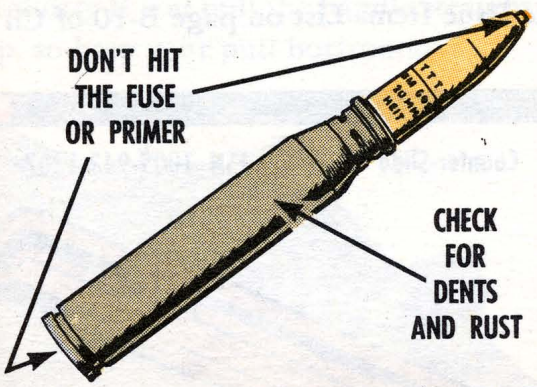
PS MORE



You wipe these parts off with a lightly oiled rag but you never, never, throw them in drycleaning solvent. This would wash out the lube inside the assemblies and you couldn't put it back because these parts are disassembled only by DS.

M139 GUN AMMO

SAFETY AND HANDLING—All types of M139 ammo are bore-safe and drop-safe but handle them gently and keep them away from extreme heat as much as possible. When handling, be careful not to hit primer or fuze. Don't use rounds that are bent, dented or rusted.

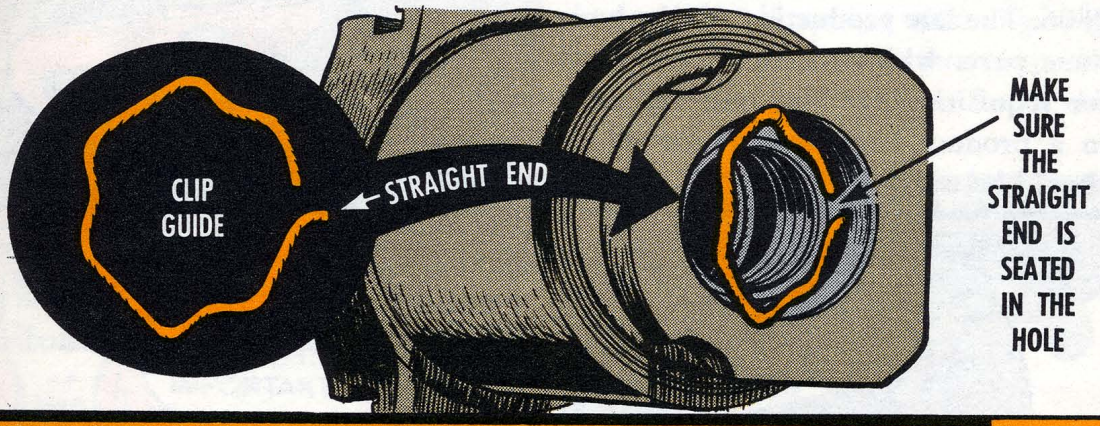


EXTRA PRECAUTIONS—The HEIT ammo has so much whammo they built a self-destruct device into it so it blows up if it gets 'way down range without hitting anything solid. This makes it more touchy than some ammo, so treat it with the gentle respect it deserves.

ADDED INFO

EASY ON THE GREASY—Be careful about over-lubing gas port and gas piston plugs. They both tend to carbon up, and too much lube would only make this worse. They do need some lube, so keep the plugs as clean as possible, and be stingy when you apply it. . . just a **thin** film will do it!

CLIP GUIDE — The clip guide is supposed to keep the rear guide tube from becoming unscrewed and vibrating out, but it won't work right unless the straight end of the driving spring clip guide is anchored in the hole in the bottom of the rear buffer assembly. So-o-o-o, if the straight end of the clip guide has been broken off, get a new one, FSN 1005-924-7318.

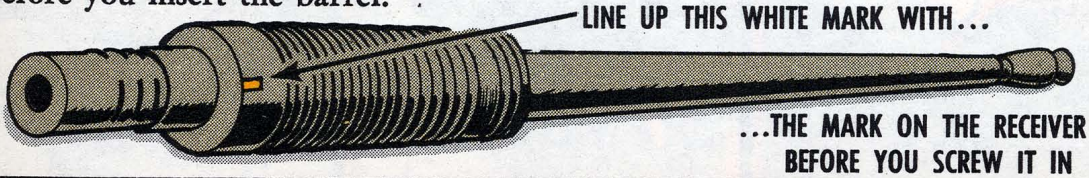


FLASHHIDER — The CMMI teams won't gig you for a loose flashhider — (lateral movement) — because this is the way it was designed.

LUBE INFO — The latest (Nov 69) edition of LO 9-2320-224-12 has a lot of good poop on lubing the M139 as well as other parts of your Spit Fire.

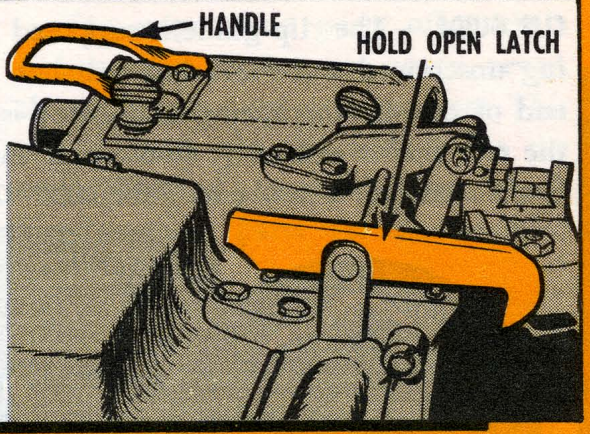
XM27 CUPOLA POINTERS

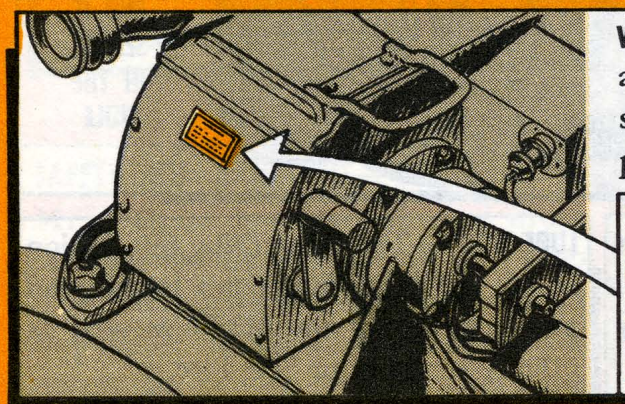
LONG BARREL — The barrel on your M139 is 75 inches long to the end of the flash-hider and that's a lot of barrel. Take things slow and easy when you traverse until you get used to the elevation you need to avoid hitting the barrel or the spent brass chute on parts of your own vehicle. To avoid damage to the external threads when screwing in the barrel, line up the thin white marks on barrel and receiver before you insert the barrel.



PS MORE

CRADLE PARTS—Fig 284, page 288.106 of Ch 3 (Jul 69) to your TM 9-2320-224-25P (Dec 64) shows a handle, Item 16 (FSN 1005-253-1388), and a hold-open latch, Item 25, FSN 1005-420-7806. The late production cradles have these parts which are not yet stocked for requisitioning. You will get them in a product improvement kit which should be ready soon.



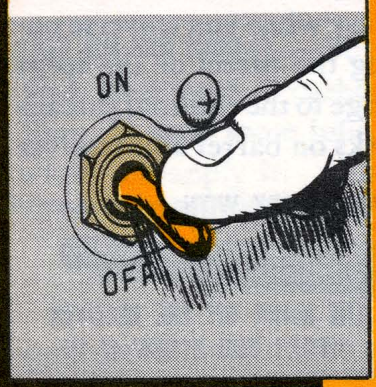


WARNING DECAL — The decal will be available later, but you can do what it says even before you get it pasted in place.

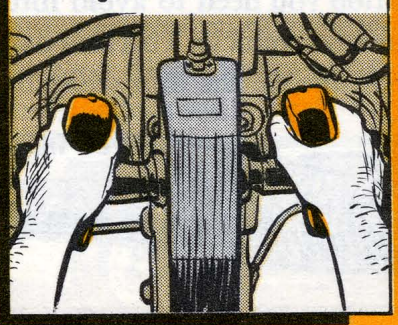
WARNING
CHARGE GUN ONLY WITH SAFETY LEVER IN FIRE POSITION. FIRE WEAPON ONLY WITH SAFETY LEVER IN FIRE POSITION. USE MANUAL MODE TO ENGAGE OR RELEASE TRAVEL LOCK

POWER PACK FILTER—The LO says to change the hydraulic filter, FSN 4330-542-2060, on your XM27 power pack either every 75 hours, 750 miles of vehicle operation or quarterly, whichever occurs first, but it doesn't tell you how to do it. Here's how—

First turn off the cupola master switch.



Then get rid of all hydraulic pressure by traversing slowly right or left until the cupola will no longer move.



Now loosen the drain plug under the hydraulic filter and catch the fluid in a can. Loosen the 4 recessed hex-head screws on the filter cap with a hex-head wrench and drain the fluid from the filter housing.

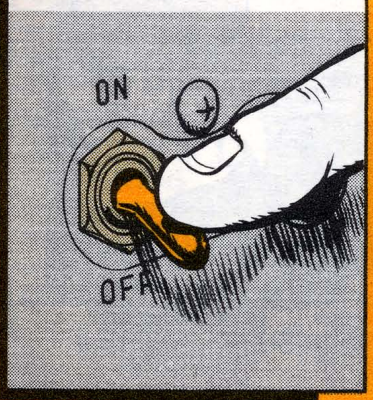
Use a screwdriver to get the filter completely out. Replace with a new filter.

MANUAL HAND PUMP—Remember, the power control handles have to be in position for movement **before** you start working the manual pump handle, and you have to keep 'em in the active position all the time you're pumping. Otherwise, you build up pressure in the hydraulic system without giving it any place to go; this could damage the pump, the check valve inside the pump body, or break the pump handle.

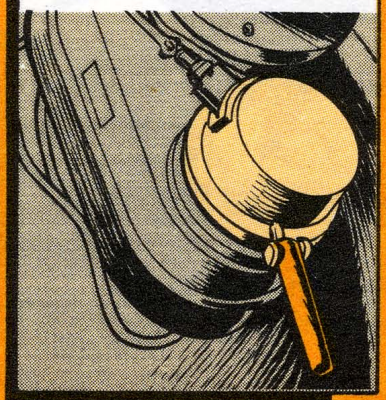
HYDRAULIC PRESSURE—Leaving your vehicle unattended with the hydraulic pressure built up in it is like leaving a gun cocked and ready to fire—dangerous! So take the pressure off before working on the gun or cupola or before leaving the vehicle without anybody in it. It just takes a few seconds and it could save somebody from getting clobbered by a gun barrel accidentally put into motion.

You take the pressure out of the hydraulic system before putting the cradle into travel lock. That way you make it impossible for somebody to get hit by the barrel which can lash out the minute the travel lock pin is pulled.

To get the pressure out of the hydraulic system, turn the master switch OFF.



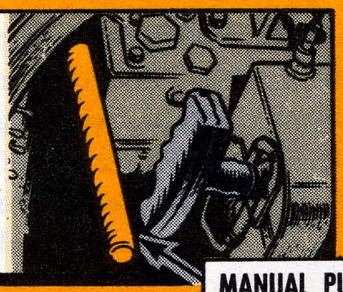
Put traverse mechanism brake handle in the full MANUAL position.



Then you use the pressure to elevate/depress or traverse left or right **slowly** until the movement stops. (The reason for the **slowly** is if you do it too fast hydraulic fluid might squirt out the breather cap on the reservoir.)

P.S. MORE

Once you have all the pressure out of the system, put the cradle into travel lock by using the manual pump. For safety, put the brake handle back into full POWER position.



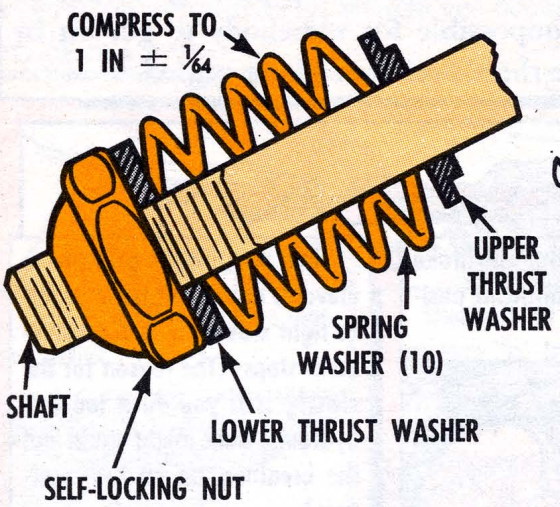
MANUAL PUMP HANDLE

CHANGE IN TM METHODS

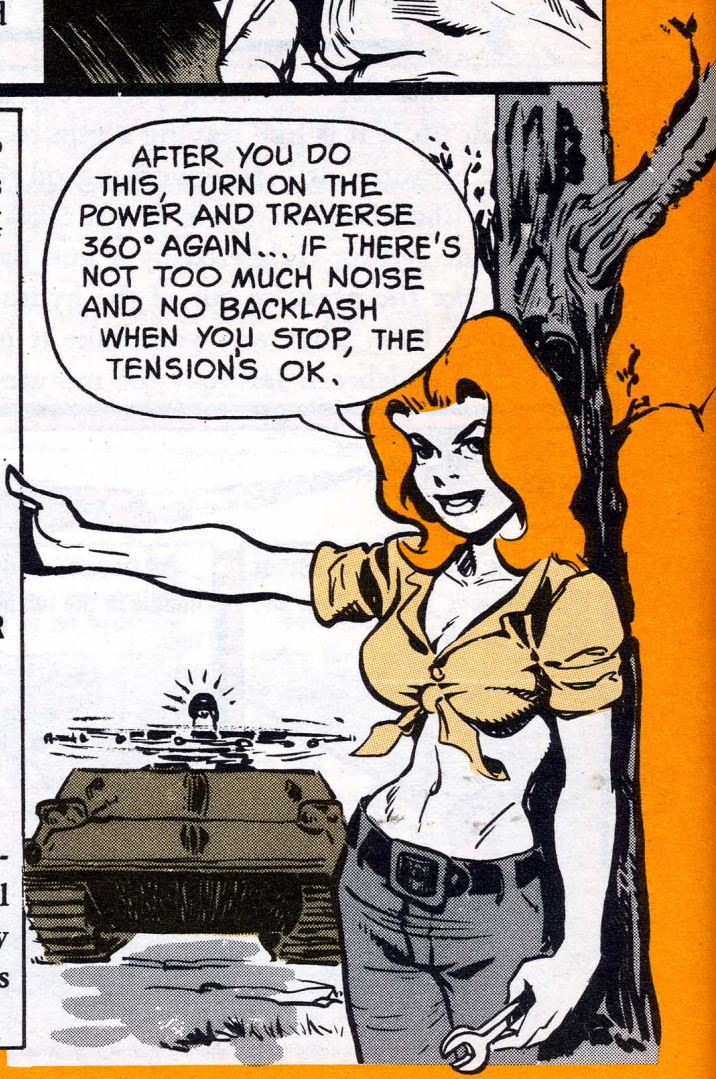
SPLIT PINION ADJUSTMENT—There has been a change in the way you adjust the traverse mechanism gear tension with the split pinion.

Fig 283.4 of Ch 4 (Jun 69) to your TM 9-2320-224-20 (Jan 65) is still good, but the preliminary step should read, "Remove 2 screws."

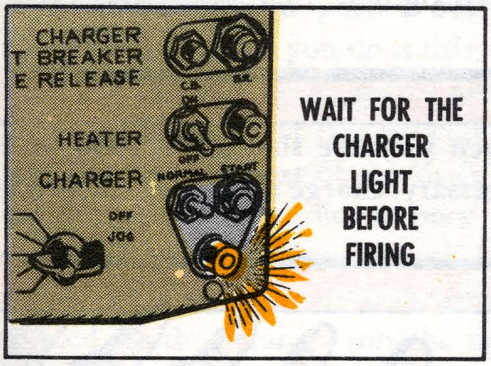
Change the adjustment procedure to read: "Tighten nut (4) until washers (2) are compressed to 1 inch ± 1/64 inch between washers (1) and (3).

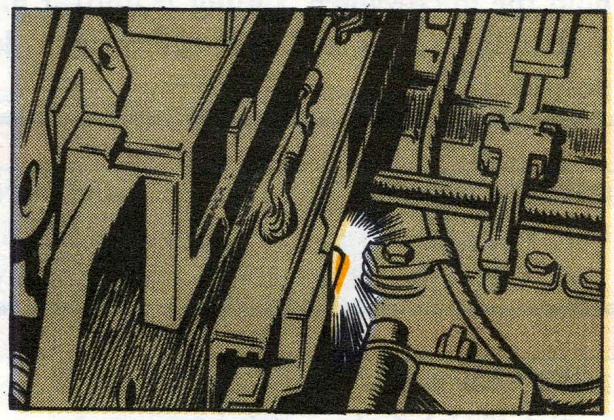


After you make this adjustment traverse the cupola slowly 360° in manual mode. If the cupola operates smoothly without binding it shows the tension is not too tight.



CHARGER PAWL—You can break your charger pawl if you try to fire the weapon with the pawl in the extended position. 'Course, with the gun secured in the cradle you can't look and see if the pawl is extended or retracted. So wait until the charger warning light goes out before firing. This tells you the pawl is in the retracted (out-of-the-way) position and it's safe to fire.





PAWL EXTENDED

CUPOLA CLEANING—Your XM27 cupola is rugged for heavy use, but cleaning the inside of the cupola with steam or high-pressure hose can ruin brakes and electrical components.

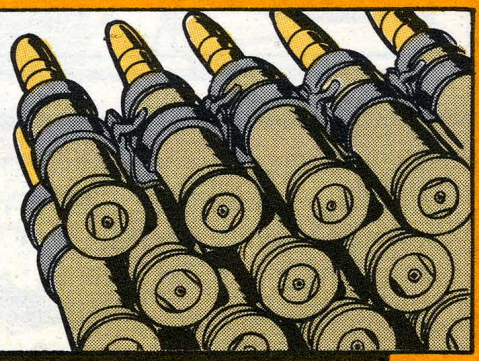
AMMO LOAD—You normally carry 400 rounds of 20-MM ammo with you in the vehicle, and you should clean and lube the weapon after firing that many rounds. If you're in a training situation, you take time out to clean and lube the gun every 550 rounds even if you're going to continue firing.

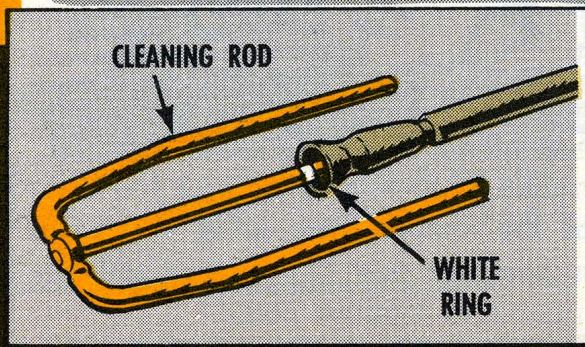
PS MORE

SAFE-TO-CHARGE SWITCH—The adjustable strike actuator in the inside, right, rear of the cradle must touch the fixed contact point when the safety is in the FIRE position. Unless this is done the weapon can not be charged. To keep these parts functioning adjust the switch as necessary instead of bending the actuator. You do this by loosening the screws that hold the microswitch, sliding it until it makes good contact with the actuator and then screwing it down tight in that position.

NITROGEN PRESSURE—The accumulator nitrogen pressure should be 1080 ± 50 PSI. Your mechanic will check it and, if necessary, charge it the way Ch 4 (page 316.7) of TM 9-2320-224-20 (Jan 65) says.

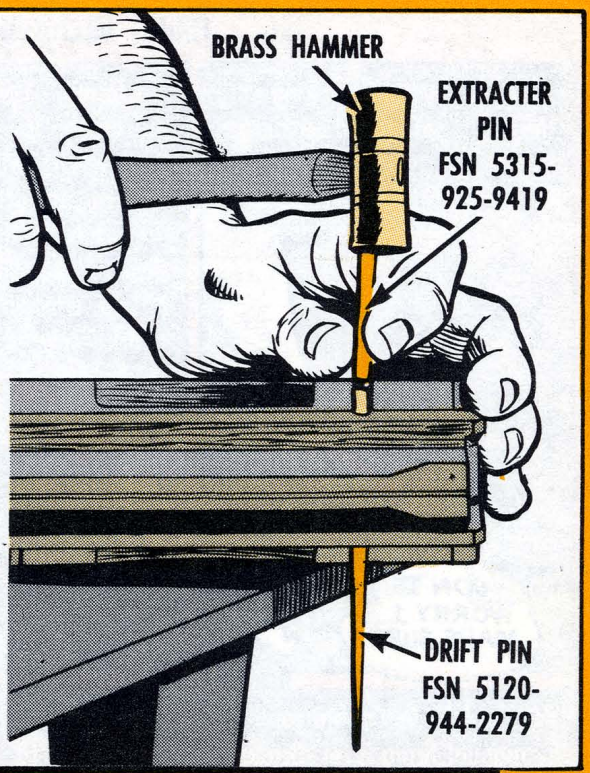
AMMO FEED BOX—When you load the ammo feed box be careful to lay the rounds in even rows, completing each row before starting on the next. If you make the rows so some rounds are in a higher row than the ones they are directly linked to, the links will get kinked and you can have a stoppage.





CLEANING ROD—Assemble the 4 sections of your cleaning rod so the section with the white ring is closest to the cleaning rod handle. If you do it that way you can tell when the far end of your cleaning rod is all the way through the barrel because the white ring will be even with the front of the flashhider.

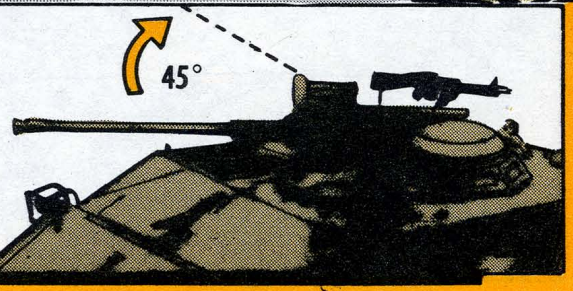
EXTRACTOR RETAINER PIN — This pin FSN 5315-925-9419 is tricky because you can't put it back the same way you got it out. To get it out you tap a brass hammer on a drift pin. To put it back you have to first drive in the drift pin after which you tap in the retainer pin until it replaces and pushes out the drift pin. The reason you do it this way is that the holes in the extractor and in the breech block don't line up right at first. The tapered part of the drift pin goes through all the holes at once and as the drift pin is hammered in it lines up the holes so when it is gradually replaced by the retainer pin the holes in the extractor and breech block are lined up.



MAKING ADJUSTMENTS

Adjusting the firing mechanism and solenoid is the toughest part of M139 maintenance. It takes 2 crewmen, one in the cupola (call him Cupola) and one on the ground (call him Ground). The firing mechanism must be adjusted first and then the solenoid.

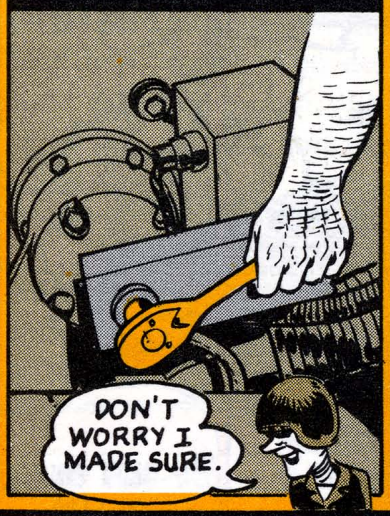
Before the action starts Cupola elevates the gun to 45° and traverses it to the left side of the vehicle. Ground is waiting there with tools. Here's how the scene goes . . .



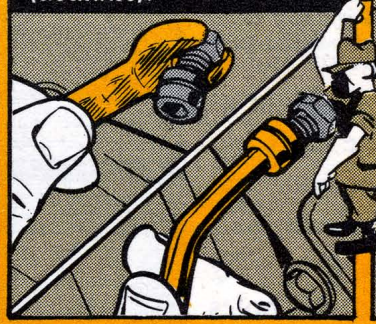
PS MORE

FIRING MECHANISM ADJUSTMENT

Cupola — After making sure the gun is not loaded he charges it.

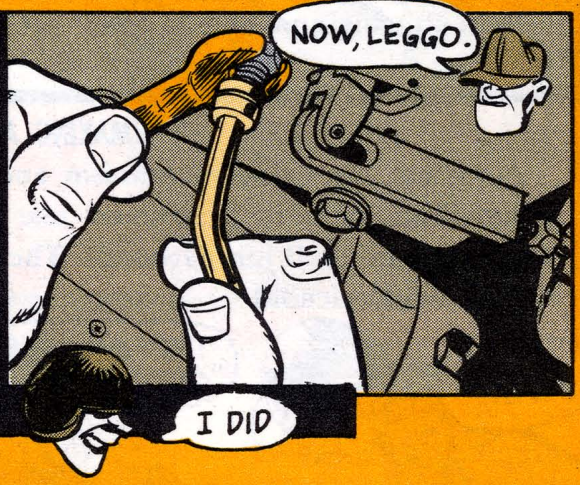


Ground—Loosens the jam nut on the fire lever adjusting screw with a 9/16-in wrench and then, with a 5/16-in hex-head wrench turns the fire lever adjusting screw all the way into the cradle (clockwise).



Cupola — Moves the manual firing lever to the rear and holds it there with a firm, even, pressure.

Ground — As Cupola continues holding back on the manual firing lever, Ground uses the wrench to let out the adjusting screw (counterclockwise) until the bolt lets go. He then turns the adjusting screw an additional half turn in the same (counterclockwise) direction and tightens the jam nut to lock it in that position. (NOTE: This takes both hands because he has to hold the adjusting screw in position with the hex-head wrench while he tightens the jam nut with the 9/16-in wrench.)

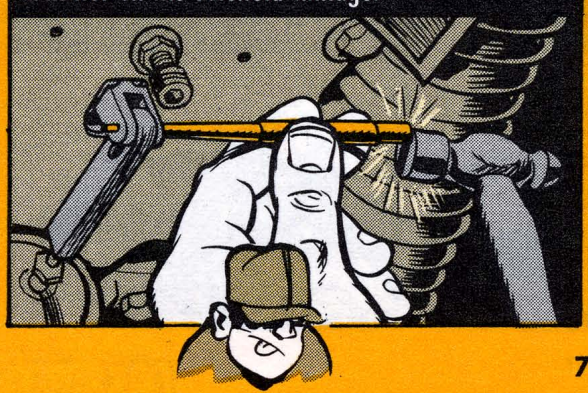


Cupola — Lets go of the manual firing lever.

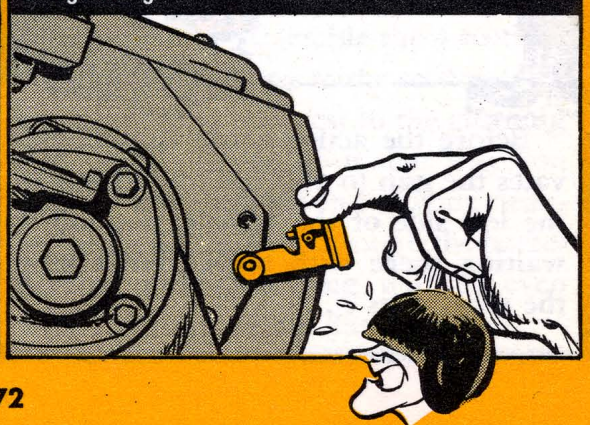
That's all there is to adjusting the firing mechanism.

SOLENOID ADJUSTMENT

Ground — Uses a punch and hammer to get out the straight pin that ties together the solenoid link and firing lever yoke. He then loosens the 7/16-in lock nut on the solenoid linkage.



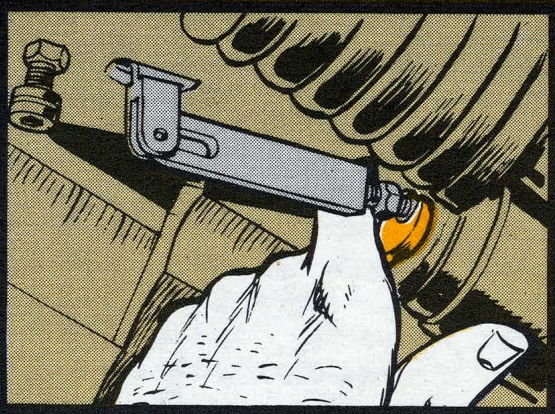
Cupola — Pulls manual firing lever all the way to the rear and holds it steady. (NOTE: He does **not** charge the gun.)

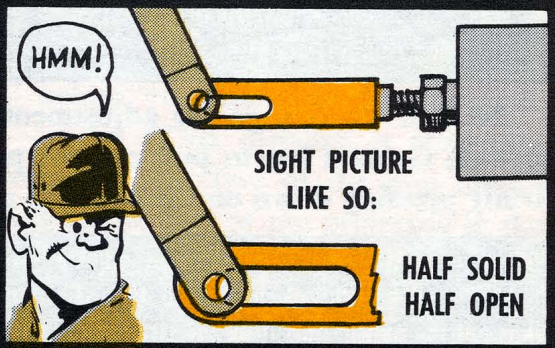


Ground — With the end of a wrench he pushes the solenoid plunger and linkage all the way in and holds it there while he looks through the hole in the firing lever yoke where the pin used to be. He should see light through half of the hole and the other half should be blocked by the solid outer end of the solenoid link.

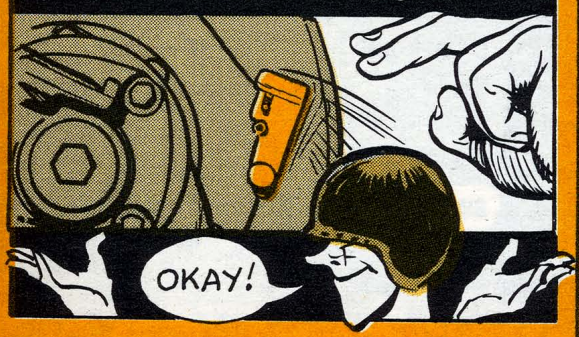
If the link is blocking more than half of the hole then he has to make the link longer until he gets the sight picture through the yoke lever hole of half-solid-part-of-the-link and half-daylight-seen-through-the-long-slot-in-the-link. He does this by turning the link counterclockwise while pressing down firmly on the solenoid plunger with the end of the 7/16 wrench.

If, on 'tuther hand, the sight picture through the yoke lever hole is less than half-solid-part-of-the-link, the link is out too far and has to be made shorter. This is done by turning the link clockwise while firmly pressing down on the solenoid plunger with the end of the 7/16 wrench.

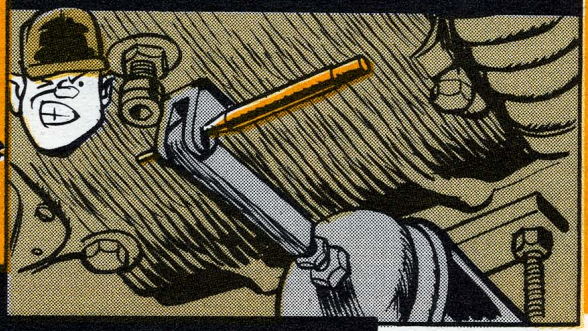




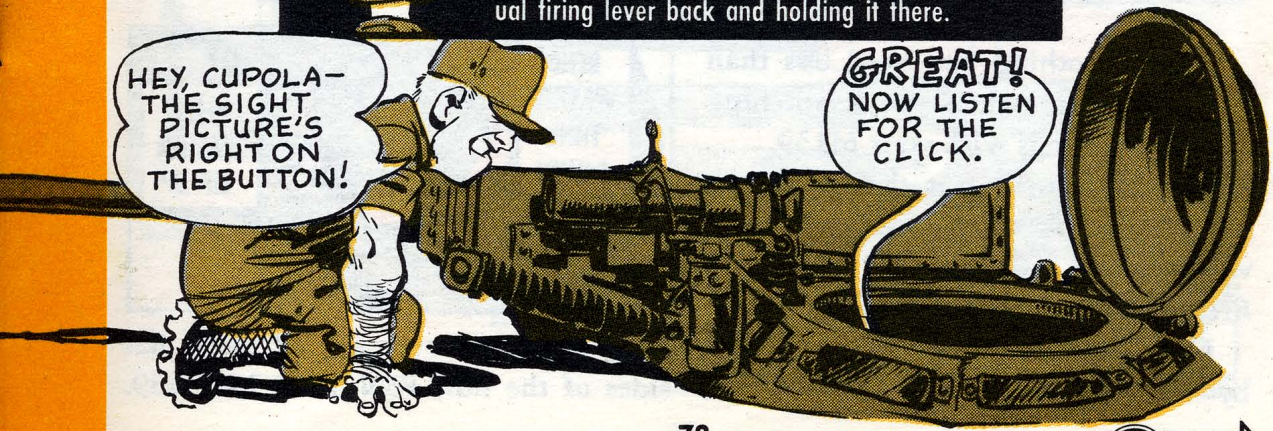
Cupola — Lets go of the firing lever.



Ground — Sticks a punch through the hole in the yoke and the slot in the link. (This is lots quicker than putting the straight pin back and then maybe having to take it out again.)



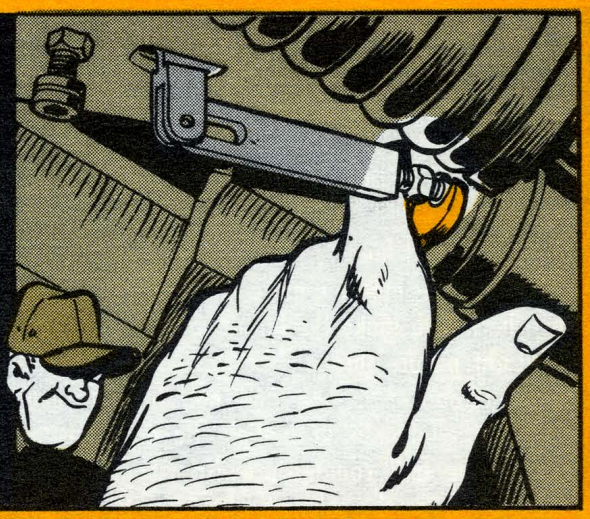
Cupola — Does his thing again, pulling the manual firing lever back and holding it there.



PS MORE

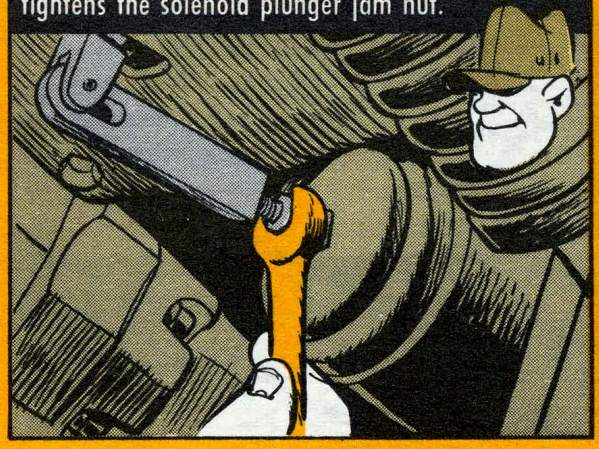
Ground — Uses the wrench end to push the solenoid plunger and link all the way back, listening for the microswitch inside the solenoid body to click. This should happen just as the front end of the slot in the linkage touches the punch in the yoke hole. If the switch clicks while there's still a space between the punch and the front end of the link slot, the link is too long and must be turned clockwise to shorten it.

If the switch fails to click when the front end of the link slot touches the punch in the yoke hole, the link is too short and must be let out more by being turned counterclockwise.

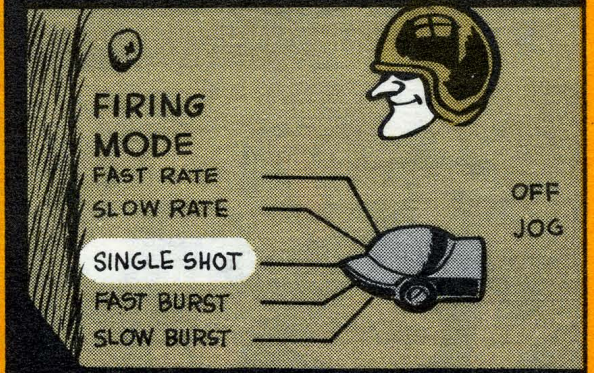


(NOTE: To change the adjustment of the link, making it either longer or shorter, Ground has to pull out the punch and move the link as needed while firmly pressing down on the solenoid plunger with the end of the 7/16 wrench.)

Ground — After the link length is adjusted so the microswitch clicks at the proper time, Ground takes out the punch, puts back the straight pin and tightens the solenoid plunger jam nut.



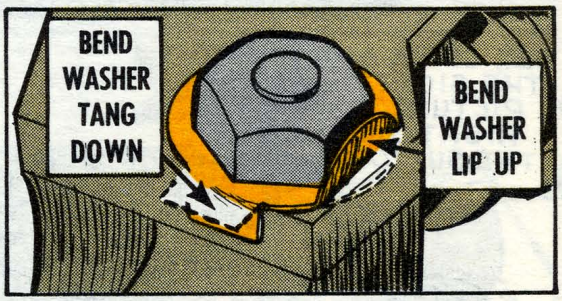
Cupola — Charges weapon, switches fire mode selector to Single Shot and fires the gun electrically. If the bolt releases the adjustment is OK.



NUTTY LITTLE NUT NOTES

There's nothing you need less than an AWOL nut when you're stitching out a few rounds with your M139.

The nutty little nut that holds the retaining hook on the recoil adapter vibrates like a Go-Go Girl when you fire your M139 in a fast burst.



Make sure it stays on the cap screw by bending the lip of washer FSN 5310-944-1042 over any of the 6 flat sides of the nut, FSN 5310-951-4889.

RAM DEPTH GAGE STORY

If you've got an M107 SP 175-MM gun, you should also have the new ram depth gage.

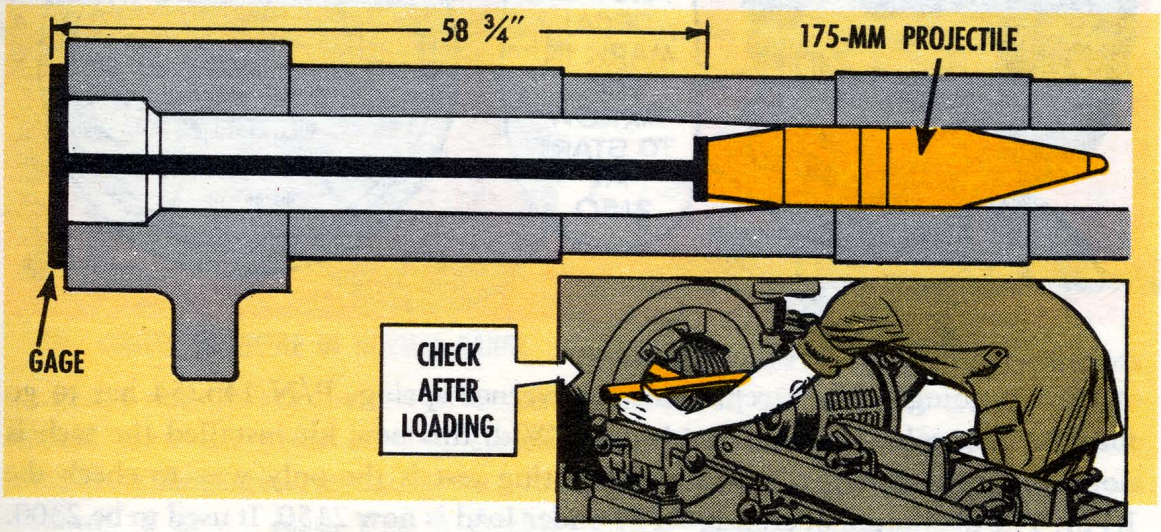
It's listed on page B-3 of Ch 1 (Feb 70) to TM 9-2300-216-10 as gage, ram, depth, FSN 1025-191-9204, (P/N 11642865) and is now ready for requisition.

You need to use this gage every time you load to make sure the projectile has been rammed far enough into the cannon. Otherwise, the weapon's firing or range could be off.

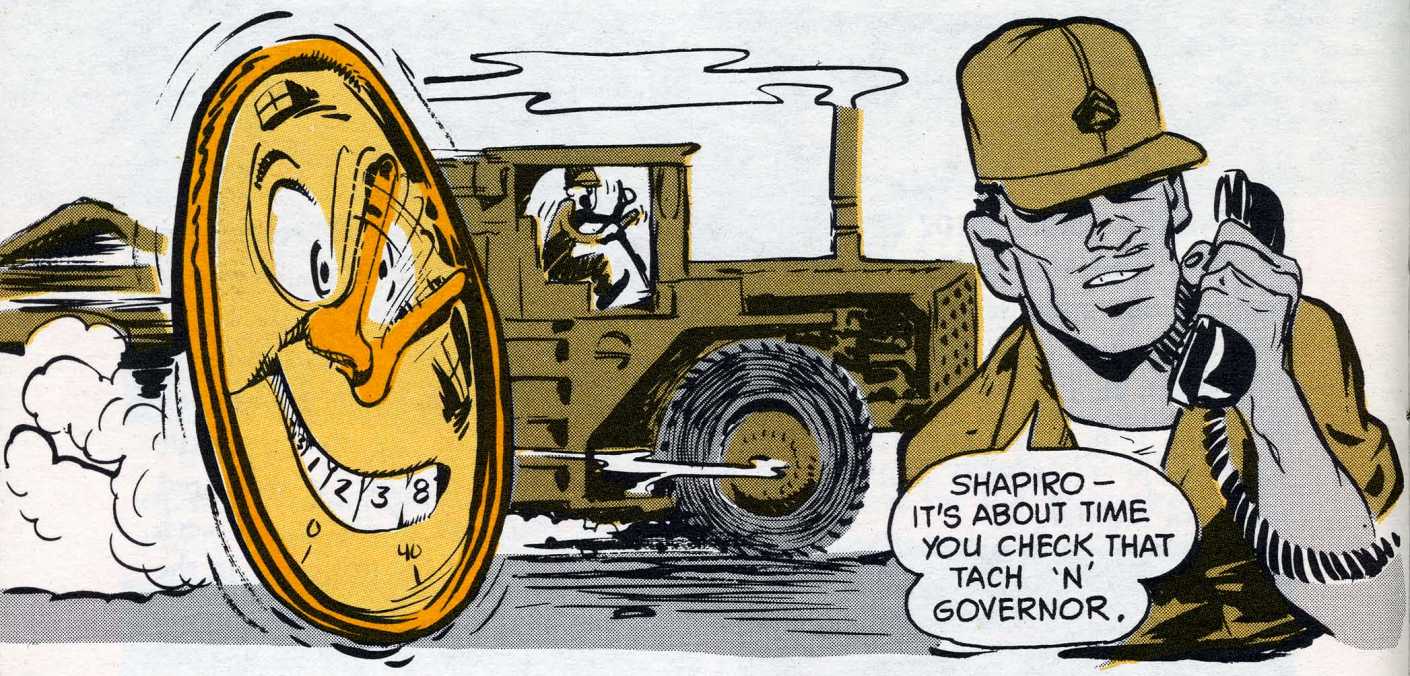
After you ram the projectile, put the ram depth gage into the bore. The T-end of the gage fits across the outside breech face of the breech ring. When the T-end is positioned properly the seating distance of the projectile is at least 58-3/4-inches, which is what it has to be before you can fire the projectile right. (This distance is measured from the rear face of the gun breech ring to the base of the projectile in the tube.)

After the projectile is seated, it's not a good idea to try to drive it forward with power rammer strokes as this can beat up your loader-rammer.

If the seating distance is less than 58-3/4 inches, remove the projectile the way it says in paras (a) through (e) on page 2-46.2 of Ch 1 (Feb 70) to TM 9-2300-216-10 (Oct 68). Follow the precautions on malfunctions in para 4-12d on pages 4-24 through 4-26 of the -10 TM.



NEW SPRING PACK... FOR YOUR 290M TACH



If the tachometer on your 290M tractor still goes over 2150-RPM under load, it's 'way overdue for a big change—and so's your governor.

The arrow warning decal (FSN 7690-924-4318) should be at 2100-RPM (plus or minus 50 is allowed on actual run). And the governor needs a new Kit, BM 76639, with shims and spring, code (15434). Get the word to your support, post-haste.

What's going on is, a replacement governor spring, P/N 143254 has to go into the box, color code red and brown. With this new kit installed the tach is not bench-checkable. An on-tractor operating test is the only way to check the RPM. The maximum operating RPM under load is now 2150. It used to be 2300.

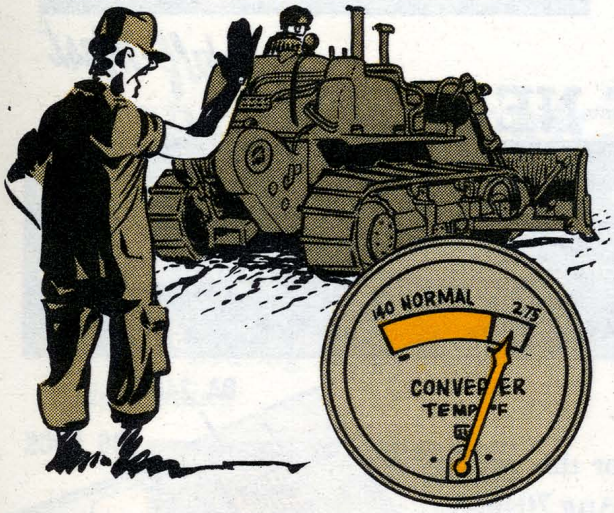
TRACTORS OVERHEATING?

SHIFT GEARS DOWN

Maybe your favorite pussycat didn't tell you, but 'tain't always your engine that makes your D7E's radiator overheat.

Could be your torque converter.

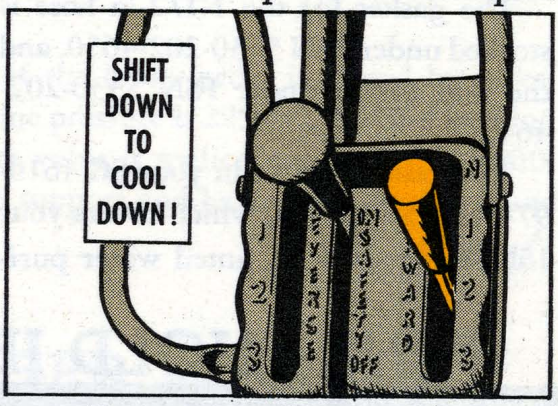
Running the tractor in a gear so high that your engine lugs and labors puts heavy strain on your torque converter . . . and it heats up. The hotter it gets, the more it strains . . . and the more it heats.



KEEP CONVERTER NEEDLE IN NORMAL RANGE

That's not all. Torque converters are cooled thru the same cooling system that cools the engine, so that gives your radiator a heavy load, then a double load, then just plain too much . . . and it blows.

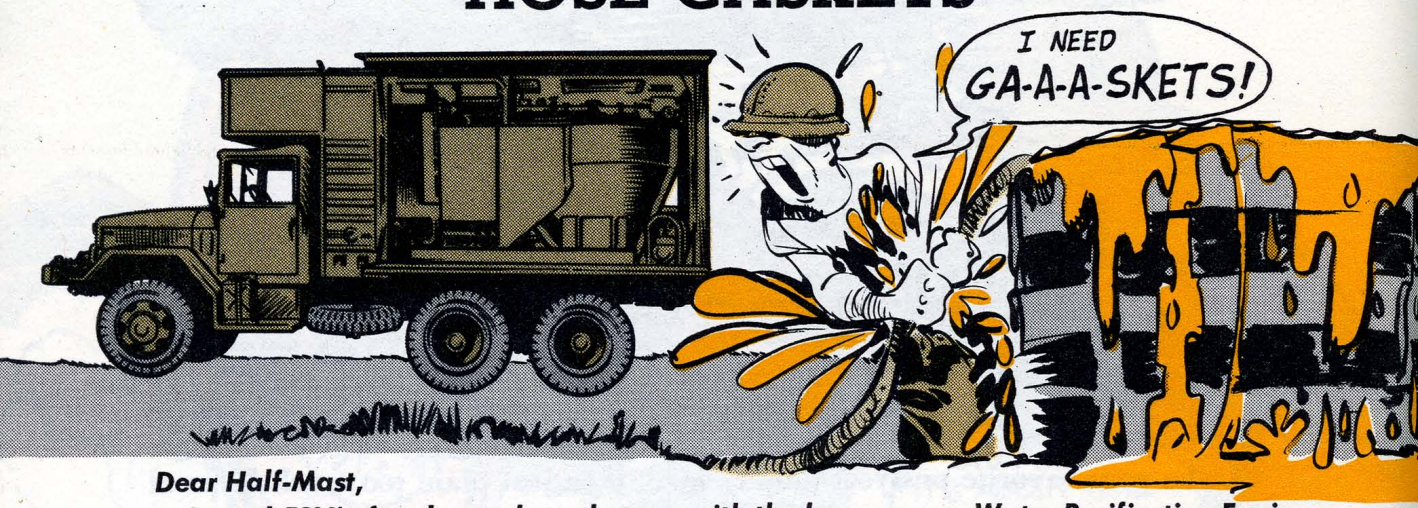
The cure? Go to a lower gear range, especially in very hot weather. When the converter is kept near its stall speed



a terrific amount of heat is generated. If you hear that engine puffing and straining, and the converter temp needle starts climbing—change gears d o w n.

Gear shifting won't save you if your crankcase and transmission guards aren't free of mud and clutter. So *do* keep 'em clean, *do* downshift when needed—and your overheat problems will go down, but fast.

WATER PURIFICATION HOSE GASKETS



Dear Half-Mast,

I need FSN's for the gaskets that go with the hoses on our Water Purification Equipment Set, FSN 4610-202-6925. Can you help?

SP5 A. E. S.

Dear Specialist A. E. S.,

The gasket for the 1-1/2-in hose is stocked under FSN 5330-202-4650, and the 2-in gasket under FSN 5330-202-4645.

The gaskets aren't in your SC 4610-97-CL-E05 (Jul 70), which covers your 1500-GPH truck mounted water purification equipment set, but they'll eventually be included. You can quote SB 700-50 (Jul 69), Expendable Items, as your authority for ordering them.

Half-Mast

UNIT CO CAN... HOLD IF NEEDED

Dear Half-Mast,

On everything but aircraft, TM 38-750, para 3-4d(2)(c) says to destroy DA Form 2404 used for an ESC rating after the result is recorded on DD 314.

That leaves us with no details on why ratings are AMBER or RED. Why not hold the DA 2404 ESC rating for all equipment?

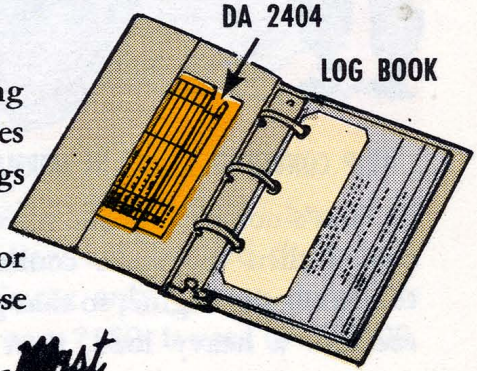
SSG S. O. L.

Dear Sergeant S. O. L.,

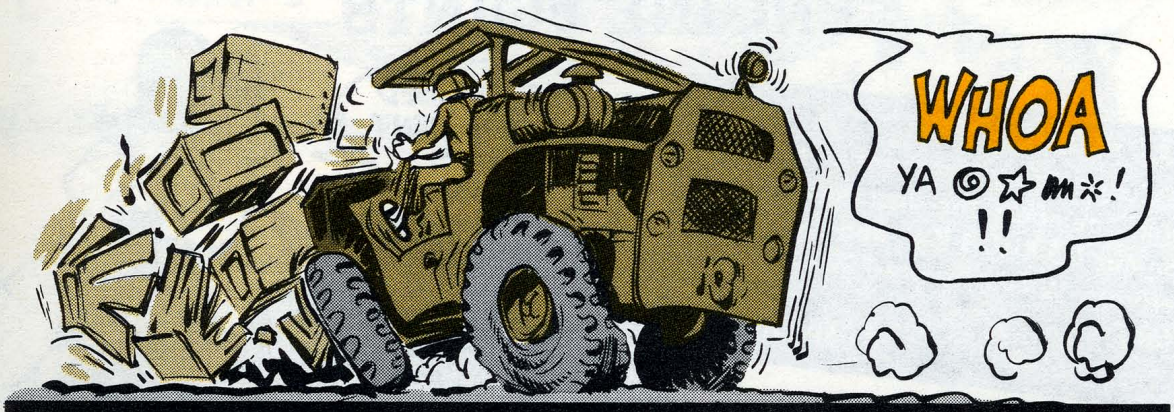
Why not indeed!

DA has recognized a possible need for this rating form at unit level. DA Msg 191853Z(Aug 70)gives the unit CO the option to retain DA 2404 ESC ratings till the next ESC inspection.

So check with your CO or maintenance officer (or your maintenance SOP) before you destroy those DA 2404's used for ESC ratings.



TIPSY DUMPER



Dear Half-Mast,

Some of our Model MLT-6 rough terrain forklifts are behaving like bucking broncos. When the operator applies the brake it cuts in so quickly that it almost dumps the load; sometimes it does.

Is there any way to make the hydraulic brake system work more smoothly?

SP4 J. B. S.

Dear Specialist J. B. S.,

Sure is.

Severe braking at the slightest touch of the brake pedal is caused by excessive brake line pressure. Normal brake line pressure is 225 to 275 PSI. Checking and setting the line pressure at the brake valve is spelled out in TM 10-3930-242-35, so take your bucking broncos to support and have them check out and readjust that line pressure.

Half-Mast

CRANE OUTRIGGER WARNING

Something missing from Models 2380 and 2385 Rough Terrain Cranes is a stencil that should've been on the outrigger housing in block letters 1-in high, reading:

WARNING
Retract Outrigger and Stow Pads before Moving Vehicle

Authority is under Minor Alterations, AR 750-35. You'll find the 1-in stencil in your common tool kits.

MILITARY STANDARD ENGINE POINTS

Dear Half-Mast,
Please straighten out the puzzle on stock numbers for distributor points on our 1.5-KW, 3-KW, and 5-KW generators. We've tried 4 FSN's, and no luck.
SP6 H. F. M.

Dear Specialist H. F. M.,

Here's how the ignition repair kits line up . . .

On 1.5-KW sets, 2A016-I and 2A016-II model engines use FSN 2920-575-3504.

2A016-III engines use FSN 2920-225-4841.

On 3-KW sets, Model 4A032-I engines use FSN 2920-575-3504.

4A032-II engines use FSN 2920-225-4841.

For 5-KW sets, only Fairbanks-Morse magnetos are repairable. Both the 2A042-II and 2A042-III use kit, FSN 2920-856-7095. Slick-made mags have to be replaced entirely.

Half-Mast

BABY, I NEED A NAME!

Yes, Man. I need a name. I'm looking for the name you want to call me. Write my name below and mail to: PS Magazine, Fort Knox, Ky. 40121.

NAME FOR ME _____

YOUR NAME _____

ADDRESS _____

_____

Winner will receive a large pin-up of me in color!

Engine Overcool

Keep your power settings in the green, Seminole (U-8) drivers, when you let-down for a landing. Hauling back on the throttles will overcool the 0-480 engines —give you cracks in the cylinder heads!

New AR 735-35

AR 735-35 (Nov 70), Supply Procedures for TOE and TDA Units or Activities, gives you the latest on property book and PLL SOP. It replaces AR 735-35 (Oct 65), with its changes, and AR 735-6 (Nov 68). It also covers keeping track of general purpose vehicles in relay operations, and supersedes AR 735-31 (Nov 54).

Sweet-16 Shooters

Don't flip over that picture of the M16A1 rifle on page 17 in PS Issue 216. All you riflemen know that you clean the M16A1 from the chamber end.

Supply Aids

New visual training aids for organizational supply are available at your audio-visual support center. Ask for packet T38-11-1 (revised) that goes with DA Pam 350-21-1, Organizational Supply. Vellum reproducibles can be shown as-is by opaque projector or copied to make slides. (Tell your DS there's a packet for them, too—Revised T38-11-2.)

Small Arms Gage Testing

TB 750-242-2 (Jul 70) tells it like it is. Order this pub from your friendly AG Publications Center at St. Louis and learn the fascinating story of how to make sure your small arms gages are accurate. Included are the places to send the gages —(pick out the one closest to you)— and a list of the gages themselves.

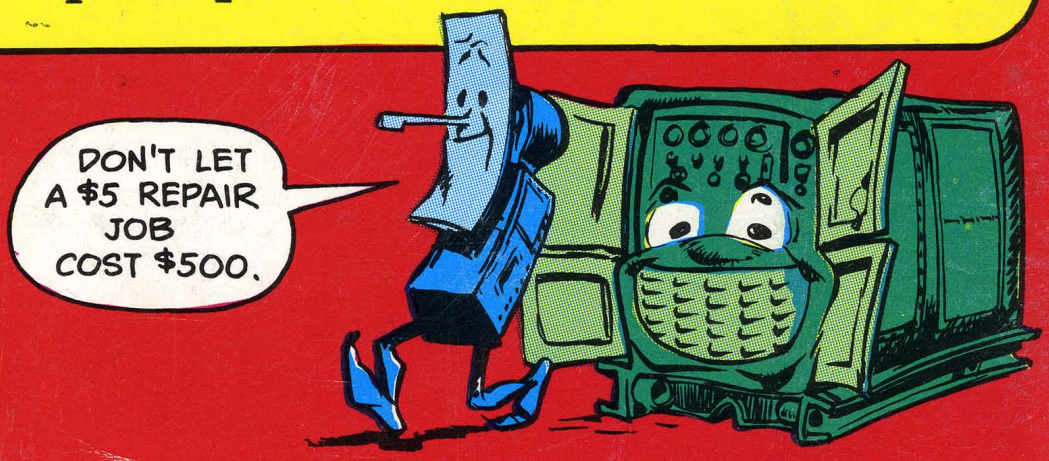
Your 5 in 1 AR

The new AR 746-1 (Aug 70) not only covers color and marking of equipment, but it includes preparation of equipment for shipment. It supersedes these AR's and all of their changes: 700-33 (Mar 65); 740-17 (Oct 64); 740-20 (Jun 65); 740-21 (Mar 66); and 746-5 (Apr 66).

Refill LSA Containers

The 2-oz and 4-oz containers for lubricating oil, semifluid, automatic weapons (LSA) are pretty tough and there's no use throwing them away when they're empty. Get 'em refilled from the gallon size, FSN 9150-753-4686.

Would You Stake Your Life right now on the Condition of Your Equipment?

DON'T KICK EQUIPMENT WHEN IT'S DOWN....

When equipment goes for repair....treat it gently! Pack it right...include log books or needed forms... sanitize it and keep components with it.